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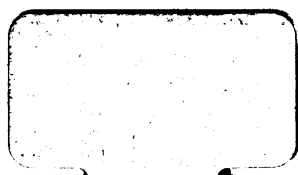
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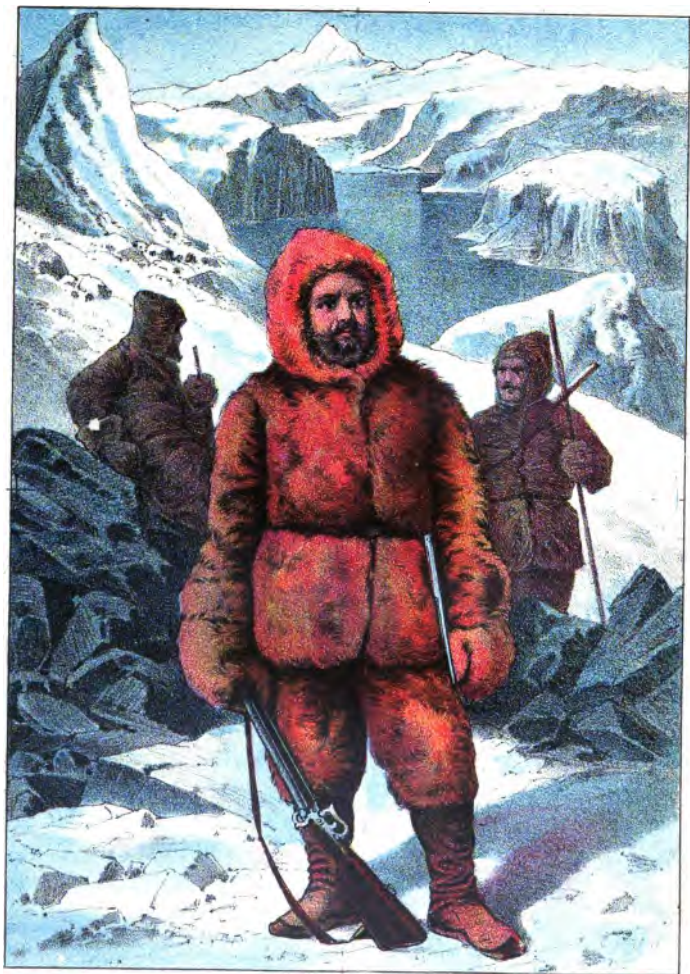
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THE
FROZEN SEAS

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EXPLANATION OF TECHNICAL TERMS

MADE USE OF IN THE COURSE OF THE FOLLOWING
NARRATIVE.

Bay or Young Ice.—Ice newly formed upon the surface.

Blink.—A peculiar brightness in the atmosphere, which is almost always perceptible in approaching ice or land covered with snow. Land-blink is usually more yellow than that of ice.

Bore.—The operation of “boring” through loose ice consists in entering it under a press of sail, and forcing the ship through by separating the masses.

Dock.—An artificial dock is formed by cutting out with saws a square space in a thick floe in which a ship is placed in order to secure her from the pressure of other masses which are seen to be approaching, and which otherwise endanger her being “nipped.” A “dock” is simply a small bight accidentally found under similar circumstances.

Field.—A sheet of ice, generally of great thickness, and of such extent that its limits cannot be seen from a ship's mast-head.

Floe.—The same as a field, except that its extent can be distinguished from a ship's mast-head. A “bay floe” is a flow of ice newly formed upon the surface.

A Hole or Pool of Water.—A small space of clear water surrounded by ice on every side

Nipped.—To be forcibly pressed between two or more masses of ice.

A Pack.—A large body of loose ice whose extent cannot be seen.

A Patch of Ice.—The same as a pack, but of small dimensions.

Sailing Ice.—Ice of which the masses are so much separated as to allow a ship to sail among them without great difficulty.

A Tongue.—A mass of ice projecting under water in a horizontal direction from an iceberg or floe. A ship sometimes grazes or is set fast on a tongue of ice, which may, however, generally be avoided, being easily seen in smooth water.

A Water Sky.—A certain dark appearance of the sky which indicates clear water in that direction, and which, when contrasted with the blink over ice or land, is very conspicuous.



IN THE FROZEN SEAS.

CHAPTER I.

THE ARCTIC LANDS.

A GLANCE at a map of the Arctic regions shows us that many of the rivers belonging to the three continents—Europe, Asia, America—discharge their waters into the Polar Ocean or its tributary bays. The territories drained by these streams, some of which (such as the Mackenzie, the Yukon, the Lena, the Yenisei, and the Obi) rank among the giant rivers of the earth, form, along with the islands within or near the Arctic Circle, the vast region over which the frost-king reigns supreme.

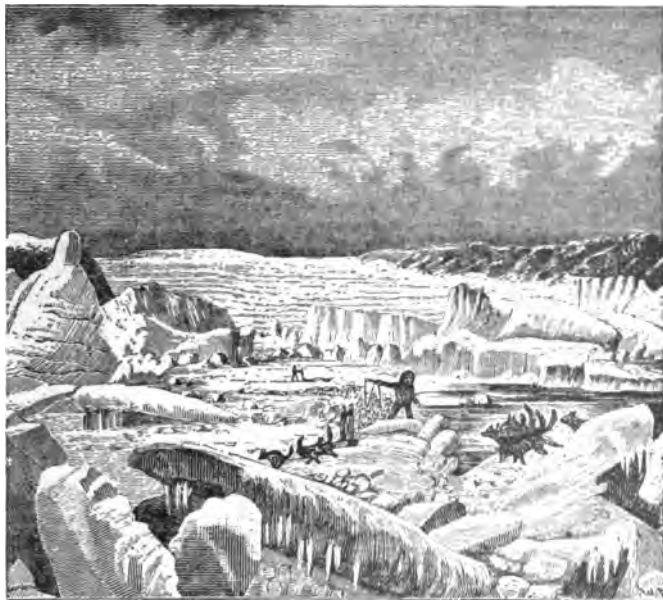
It is difficult to determine with precision the limits of the Arctic lands, since many countries situated as low

as latitude 60° , or even 50° , such as South Greenland, Labrador, Alaska, Kamtchatka, or the country about Lake Baikal, have in their climate and productions a decidedly Arctic character, while others of a far more northern position, such as the coast of Norway, enjoy even in winter a remarkably mild temperature. But they are naturally divided into two principal and well-marked zones—that of the forests, and that of the treeless wastes.

The latter, comprising the islands within the Arctic Circle, form a belt, more or less broad, bounded by the continental shores of the North Polar seas, and gradually merging toward the south into the forest-region, which encircles them with a garland of evergreen coniferæ. This treeless zone bears the name of the "barren grounds," or the "barrens," in North America, and of "tundri" in Siberia and European Russia. Its want of trees is caused not so much by its high northern latitude as by the cold sea-winds which sweep unchecked over the islands or the flat coast-lands of the Polar Ocean, and for miles and miles compel even the hardiest plant to crouch before the blast and creep along the ground.

In winter, when animal life has mostly retreated to the south, or sought a refuge in burrows or in caves, an awful silence, interrupted only by the hooting of a snow-owl or the yelping of a fox, reigns over their vast expanse; but in spring, when the brown earth reappears from under the melted snow and the swamps begin to thaw, enormous flights of wild birds appear upon the scene and enliven it for a few months. An admirable instinct leads their winged legions from distant climes to the Arctic wildernesses, where in the morasses or lakes,

on the banks of the rivers, on the flat strands, or along the fish-teeming coasts, they find an abundance of food, and where at the same time they can with greater security build their nests and rear their young. Some



A GREENLAND ICE FIORD.

remain on the skirts of the forest-region ; others, flying farther northward, lay their eggs upon the naked tundra. Eagles and hawks follow the traces of the natatorial and strand birds ; troops of ptarmigans roam among

the stunted bushes; and when the sun shines, the finch or the snow-bunting warbles his merry note.

But as soon as the first frosts of September announce the approach of winter, all animals, with but few exceptions, hasten to leave a region where the sources of life must soon fail. The geese, ducks, and swans return in dense flocks to the south; the strand-birds seek in some lower latitude a softer soil which allows their sharp beak to seize a burrowing prey; the water-fowl forsake the bays and channels that will soon be blocked up with ice; the reindeer once more return to the forest, and in a short time nothing is left that can induce man to prolong his stay in the treeless plain. Soon a thick mantle of snow covers the hardened earth, the frozen lake, the ice-bound river, and conceals them all—seven, eight, nine months long—under its monotonous pall, except where the furious north-east wind sweeps it away and lays bare the naked rock.

This snow, which after it has once fallen persists until the long summer's day has effectually thawed it, protects in admirable manner the vegetation of the higher latitudes against the cold of the long winter season. For snow is so bad a conductor of heat, that in mid-winter, in the high latitude of $78^{\circ} 50'$ (Rensselaer Bay), while the surface temperature was as low as -30° , Kane found at two feet deep a temperature of -8° , at four feet $+2^{\circ}$, and at eight feet $+26^{\circ}$, or no more than six degrees below the freezing-point of water. Thus covered by a warm crystal snow-mantle, the northern plants pass the long winter in a comparatively mild temperature, high enough to maintain their life, while, without, icy blasts—capable of converting mercury into a solid body—howl over the naked wilderness; and as

the first snow-falls are more cellular and less condensed than the nearly impalpable powder of winter, Kane justly observes that no "eider-down in the cradle of an infant is tucked in more kindly than the sleeping-dress of winter about the feeble plant-life of the Arctic zone." Thanks to this protection, and to the influence of a sun which for months circles above the horizon, and in favorable localities calls forth the powers of vegetation in an incredibly short time, even Washington, Grinnell Land, and Spitzbergen are able to boast of flowers. Morton plucked a crucifer at Cape Constitution ($80^{\circ} 45'$ N. lat.),



ARCTIC FOX.

and, on the banks of Mary Minturn River ($78^{\circ} 52'$), Kane came across a flower-growth which, though drearily Arctic in its type, was rich in variety and coloring. Amid festuca and other tufted grasses twinkled the purple *lychnis* and the white star of the chickweed; and, not without its pleasing associations, he recognized a solitary *hesperis*—the Arctic representative of the wall-flowers of home.

The line of perpetual snow may naturally be expected to descend lower and lower on advancing to the pole, and hence many mountainous regions or elevated plateaux, such as the interior of Spitzbergen, of Greenland, of Nova Zembla, etc., which in a more temperate clime would be verdant with woods or meadows, are here covered with vast fields of ice, from which frequently glaciers descend down to the verge of the sea. But even in the highest northern latitudes, no land has yet been found covered as far as the water's edge with eternal snow, or where winter has entirely subdued the powers of vegetation.

The influence of the winds is of considerable importance in determining the greater or lesser severity of an Arctic climate. Thus the northerly winds which prevail in Baffin's Bay and Davis's Straits during the summer months, and fill the straits of the American north-eastern archipelago with ice, are probably the main cause of the abnormal depression of temperature in that quarter; while, on the contrary, the southerly winds that prevail during summer in the valley of the Mackenzie tend greatly to extend the forest of that favored region nearly down to the shores of the Arctic Sea. Even in the depth of a Siberian winter, a sudden change of wind is able to raise the thermometer from a mercury-congealing cold to a temperature above the freezing-point of water, and a warm wind has been known to cause rain to fall in Spitzbergen in the month of January.

The voyages of Kane and Belcher have made us acquainted with the lowest temperatures ever felt by man. On February 5, 1854, while the former was wintering in Smith's Sound ($78^{\circ} 37'$ N. lat.), the mean of his best



THE VILLAGE AND GLACIER OF KAPROKTIK, GREENLAND.

spirit-thermometer showed the unexampled temperature of -68° or 100° below the freezing-point of water. The exhalations from the skin invested the exposed or partially clad parts with a wreath of vapor. The air had a perceptible pungency upon inspiration, and every one, as it were involuntarily, breathed guardedly with compressed lips. About the same time (February 9 and 10, 1854), Edward Belcher experienced a cold of -55° in Wellington Channel ($75^{\circ} 31' N.$), and the still lower temperature of -62° on January 13, 1853, in Northumberland Sound ($76^{\circ} 52' N.$). Whympers, on December 6, 1866, experienced -58° at Nulatto, Alaska ($64^{\circ} 42' N.$).

Whether the temperature of the air descends still lower on advancing toward the pole, or whether these extreme degrees of cold are not sometimes surpassed in those mountainous regions of the north which, though seen, have never yet been explored, is of course an undecided question: so much is certain, that the observations hitherto made during the winter of the Arctic regions have been limited to too short a time, and are too few in number, to enable us to determine with any degree of certainty those points where the greatest cold prevails. All we know is, that beyond the Arctic Circle, and eight or ten degrees farther to the south in the interior of the continents of Asia and America, the average temperature of the winter generally ranges from -20° to -30° , or even lower, and for a great part of the year is able to convert mercury into a solid body.

It may be asked how man is able to bear the excessively low temperature of an Arctic winter, which must appear truly appalling to an inhabitant of the temperate zone. A thick fur clothing; a hut small and low,

where the warmth of a fire, or simply of a train-oil lamp, is husbanded in a narrow space, and, above all, the wonderful power of the human constitution to accommodate itself to every change of climate, go far to counteract the rigor of the cold.

After a very few days the body develops an increasing warmth as the thermometer descends; for the air being condensed by the cold, the lungs inhale at every breath a greater quantity of oxygen, which of course accelerates the internal process of combustion, while at the same time an increasing appetite, gratified with a copious supply of animal food, of flesh and fat, enriches the blood and enables it to circulate more vigorously. Thus not only the hardy native of the north, but even the healthy traveler, soon gets accustomed to bear without injury the rigors of an Arctic winter.

"The mysterious compensations," says Kane, "by which we adapt ourselves to climate are more striking here than in the tropics. In the Polar zone the assault is immediate and sudden, and, unlike the insidious fatality of hot countries, produces its results rapidly. It requires hardly a single winter to tell who are to be the heat-making and acclimatized men. Petersen, for instance, who has resided for two years at Upernavik, seldom enters a room with a fire. Another of our party, George Riley, with a vigorous constitution, established habits of free exposure, and active cheerful temperament, has so inured himself to the cold, that he sleeps on our sledge journeys without a blanket or any other covering than his walking suit, while the outside temperature is — 30°."

There are many proofs that a milder climate once reigned in the northern regions of the globe. Fossil

pieces of wood, petrified acorns and fir-cones have been found in the interior of Banks's Land by McClure's



FEMALE COSTUME.

sledging parties. At Anakerdluk, in North Greenland (70° N.), a large forest lies buried on a mountain surrounded by glaciers, 1080 feet above the level of the sea. Not only the trunks and branches, but even the leaves, fruit-cones, and seeds have been preserved in the soil, and enable the botanist to determine the species of the plants to which they belong. They show that, besides firs and sequoias, oaks, plantains, elms,

magnolias, and even laurels, indicating a climate like Switzerland, flourished during the miocene period in a

country where now even the willow is compelled to creep along the ground. During the same epoch of the earth's history Spitzbergen was likewise covered with stately forests. The same poplars and the same swamp-cypress which then flourished in North Greenland have been found in a fossilized state at Bell Sound (76° N.) by the Swedish naturalists, who also discovered a plantain and a linden as high as 78° and 79° in King's Bay—a proof that in those times the climate of Spitzbergen can not have been colder than that which now reigns in Southern Sweden and Norway, 18 degrees nearer to the line.

In the miocene times the Arctic Zone evidently pre-



MALE COSTUME.

sented a very different aspect from that which it wears at present. Now, during the greater part of the year, an immense glacial desert, which through its floating bergs and drift-ice depresses the temperature of countries situated far to the south, it then consisted of verdant lands covered with luxuriant forests and bathed by an open sea.

What may have been the cause of these amazing changes of climate? The readiest answer seems to be—a different distribution of sea and land.

We now know that our sun, with his attendant planets and satellites, performs a vast circle, embracing perhaps hundreds of thousands of years, round another star, and that we are constantly entering new regions of space untraveled by our earth before. In the course of ages the sun conducted his herd of planets into more solitary and colder regions, which caused the warm miocene times to be followed by the glacial period, during which the Swiss flat lands bore an Arctic character, and finally the sun emerged into a space of an intermediate character, which determines the present condition of the climates of our globe.

Though nature generally wears a more stern and forbidding aspect on advancing toward the Pole, yet the high latitudes have many beauties of their own. Nothing can exceed the magnificence of an Arctic sunset, clothing the snow-clad mountains and the skies with all the glories of color, or be more serenely beautiful than the clear star-light night, illumined by the brilliant moon, which for days continually circles around the horizon, never setting until she has run her long course of brightness. The uniform whiteness of the landscape and the general transparency of the atmosphere add to



AURORA.
(*Sketched by Hall.*)

the luster of her beams, which serve the natives to guide their nomadic life, and to lead them to their hunting-grounds.

But of all the magnificent spectacles that relieve the monotonous gloom of the Arctic winter, there is none to equal the magical beauty of the Aurora. This bow sometimes remains for several hours, heaving or waiving to and fro, before it sends forth streams of light ascending to the zenith. Sometimes these flashes proceed from the bow of light alone; at others they simultaneously shoot forth from many opposite parts of the horizon, and form a vast sea of fire whose brilliant waves are continually changing their position. Finally they all unite in a magnificent crown or copula of light, with the appearance of which the phenomenon attains its highest degree of splendor. The brilliancy of the streams, which are commonly red at their base, green in the middle, and light yellow toward the zenith, increases, while at the same time they dart with greater vivacity through the skies. The colors are wonderfully transparent, and the imposing silence of the night heightens the charms of the magnificent spectacle.

But gradually the crown fades, the bow of light dissolves, the streams become shorter, less frequent, and less vivid; and finally the gloom of winter once more descends upon the northern desert.

The North Polar region is the largest, as it is the most important field of discovery that remains for this generation to work out. As Frobisher declared nearly 300 years ago, it is "*the only great thing left undone in the world.*"

A large portion of the area yet included by the Arctic Ocean is still unexplored, but almost every year dimin-

ishes the extent of the unknown. Notwithstanding so many illustrious navigators have vainly endeavored to reach the Pole, sanguine projectors are still as eager as ever to attain the goal; nor is it probable that man will ever rest in his efforts until every attainable region of the Arctic Ocean shall have been fully explored.

But it may be asked, for what purpose are these northern voyages undertaken? The acquisition of knowledge is the groundwork of all the instructions under which they are set forth. The commanding officer is directed to cause constant observations to be made for the advancement of every branch of science—astronomy, navigation, hydrography, meteorology, including electricity and magnetism, and to make collections of subjects of natural history—in short, to lose no opportunity of acquiring new and important information and discovery; and when it is considered that these voyages give employment to officers and men in time of peace, and produce officers and men not to be surpassed, perhaps not equaled, in any other branch of the service; the question, What is the good? is readily answered in Bacon's aphorism, "Knowledge is power."

At a meeting of the Royal Geographical Society Captain Sherard Osborne said:

"In the year 1818 Baffin's discoveries upon the one hand, and those of Behring upon the other, with dots for the mouths of the Mackenzie and Hearne Rivers, were all we knew of the strange labyrinth of lands and waters now accurately delineated upon our charts of the Arctic Zone. Sailors and travelers, in 36 years, have accomplished all this; not always, be it remembered, in well-stored ships, sailing rapidly from point to point, but for the most part by patiently toiling on foot, or coast-

ing in open boats round every bay and fiord. Leopold McClintock estimates the foot explorations accomplished in the search for Franklin alone at about 40,000 miles. Yet during those 36 years of glorious enterprise by ship, by boat, and by sledge, England only fairly lost one expedition and 128 souls out of 42 successive expeditions, and has never lost a sledge party out of about 100 that have toiled within the Arctic Circle. Show me upon the globe's surface an equal amount of geographical discovery, or in history as arduous an achievement, with a smaller amount of human sacrifice, and then I will concede that Arctic exploration has entailed more than its due proportion of suffering.

“Those who assert that our labors and researches have merely added so many miles of unprofitable coast-line to our charts, had better compare our knowledge of Arctic phenomena to-day with the theories enunciated by men of learning and repute a century ago. They should confront our knowledge of to-day with that of 1800 upon the natural history, meteorology, climate, and winds of the Arctic regions. They must remember that it was there we obtained the clue, still unraveled, of the laws of those mysterious currents which flow through the wastes of the ocean like two mighty rivers—the Gulf Stream and the Ice Stream; must remember that it was there—in Boothia—that the two Rosses first reached the Magnetic Pole, that mysterious point round which revolves the mariner's compass over one-half of the Northern hemisphere; and let the world say whether the mass of observations collected by our explorers on all sides of that Magnetic Pole have added nothing to the knowledge of the laws of magnetic declination and dip. They should remember how a few years ago it

was gravely debated whether man could exist through the rigors and darkness of a Polar winter, and how we have only recently discovered that Providence has peopled that region to the extreme latitude yet reached, and that the animals upon which they subsist are there likewise, in winter as well as in summer. All this, and much more, should be borne in mind by those cynics who would have you believe we have toiled in vain; and I hold, with the late Admiral Beechey, 'that every voyage to the North has tended to remove that veil of obscurity which previously hung over the geography and all the phenomena of the Arctic regions. Before those voyages all was darkness and terror, all beyond the North Cape a blank; but, since then, each successive voyage has swept away some gloomy superstition, has brought to light some new phenomenon, and tended to the advancement of human knowledge.'"

Henry Grinnell of New York replied to a similar question by stating some of the results in the extension of commerce and trade which have flowed from Arctic researches:

1. HUMPHREY GILBERT'S discovery of the cod-fisheries of Newfoundland.

2. From DAVIS'S discoveries, the great whale-fisheries of West Greenland.

3. From the discoveries of HUDSON (who also discovered and sailed into our North River, which now bears his name, while on an Arctic voyage), Hudson's Bay, and the operations of the great fur companies.

4. JOHN ROSS: the whale-fishery of the North, and north-west of Baffin's Bay.

5. Captain PARRY: whale-fishery of Lancaster Sound, Barrow's Strait, and Prince Regent's Inlet.

6. Admiral BEECHEY: whale-fishery of Behring's Straits, in which in the space of two years the whalers of Nantucket and New Bedford obtained cargoes from which they have realized eight millions of dollars.

The object of the present volume is to recall the stories of the early voyagers, and to narrate the recent efforts of gallant adventurers of various nationalities to cross the "unknown and inaccessible" threshold; and to show how much can be accomplished by indomitable pluck and steady perseverance. In the limits at our disposal we have not space to relate the adventures of all the individual voyagers; we have therefore selected and traced those which appear to embody the greatest interest.

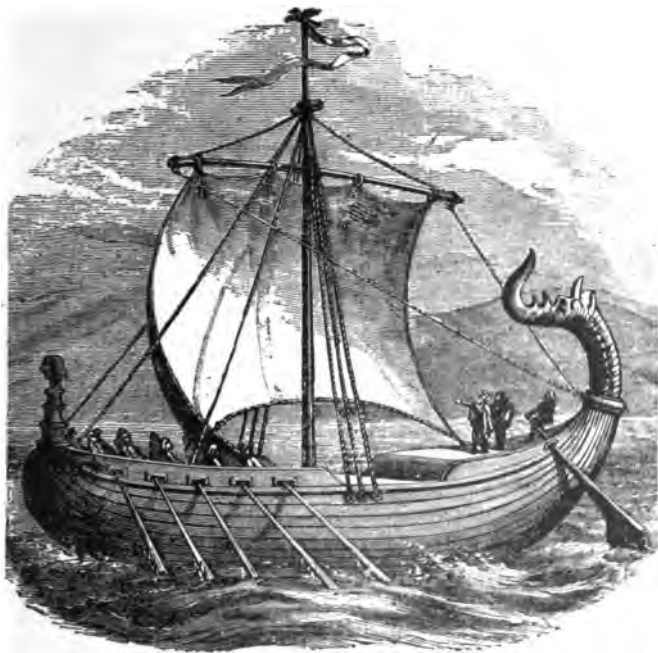
CHAPTER II.

VOYAGES OF DISCOVERY FROM THE CABOTS TO BAFFIN.

LONG before Columbus sailed from the port of Palos (1492) on that ever-memorable voyage which changed the geography of the world, the Scandinavians had already found the way to North America. From Greenland, which was known to them as early as the ninth century, and which they began to colonize in the year 985, they sailed farther to the west, and gradually extended their discoveries from the coasts of Labrador, Nova Scotia, and Newfoundland to those of the present State of Rhode Island, which, from the wild-vines they there found growing in abundance, they called the "good Vinland."

But a long series of disasters destroyed their Greenland Colonies about the end of the fourteenth century,

and as Scandinavia itself had at that time but very little intercourse with the more civilized nations of Southern Europe, it is not to be wondered at, despite the discov-



NORSE SHIP OF THE TENTH CENTURY.

eries of G nnbjorn and Eric the Red, the great western continent remained unknown to the world in general.

One of the first consequences of the achievements of Columbus was the *rediscovery* of the northern part

of America, for the English merchants longed to have a share of the commerce of India; and as the Pope had assigned the eastern route to the Portuguese and the western one to the Spaniards, they resolved to ascertain whether a third and shorter way to the Spice Islands, or to the fabulous golden regions of the East might not be found by steering to the north-west. In pursuance of these views, John and Sebastian Cabot sailed in 1497 from Bristol, at that time the chief commercial port of England, and discovered the whole American coast from Labrador to Virginia. They failed, indeed, in the object of their mission, but they laid the first foundations of the future colonial greatness of England.

Cabot appears to have returned to England immediately after his discovery, as we find in the account of the privy purse expenses of Henry VII, the following entry:

**10th August, 1497—To him that found the
New Isle, £10.**

Here we have proof positive that part of the North American continent was visited by an English ship fourteen months before Columbus ascertained for certain the existence of that of a southern.

A second voyage, in 1498, by Sebastian Cabot alone, had no important results, but in a third voyage which he undertook in search of a north-west passage, at the expense of Henry VIII, in 1516 or 1517, it is tolerably certain that that great navigator discovered the two straits which now bear the names of Davis and Hudson. The failure of this voyage was attributed to a mutiny of the crew; and the pusillanimity of the commander, Sir Thomas Pert, compelled Cabot to return home.

For several years there was no further attempt at a northern voyage out of England. But Portugal, at this period England's most formidable rival on the sea, was not so unwise as to allow so promising a field of honor and emolument to remain unexplored. A passage by



SEBASTIAN CABOT.

water had been found around the continent of Africa by one of her sons (De Gama), and this strengthened the belief that one would be found also around the continent of Europe, or through some portion of the northern part of America. Accordingly, Gaspar Corteal fitted out two ships at his own expense, and sailed

from Lisbon in 1500, with the intention of following up Sebastian Cabot's discoveries. He touched at the Azores, and then pursued a course which led him to Labrador, and he proceeded to explore it for upward of 600 miles. In a letter written October 19, 1501, only eleven days after the return of Cortoreal from his northern voyage, it was stated, "On October 8, one of the caravels under the command of Cortoreal arrived here, and reports the finding of a country distant hence west and north-west 2000 miles, heretofore quite unknown. They proceeded over 600 miles without reaching its termination, from which circumstance they conclude it to be of the mainland *connected with another region which last year was discovered in the north*, but which the caravel *could not reach* on account of the ice and the vast quantity of snow; and they are confirmed in this belief by the multitude of great rivers they found, which certainly could not proceed from an island. They say the country is *very populous*, and the dwellings of the inhabitants are constructed with timber of great length and covered with the skins of fishes. They have brought thither 57 of the inhabitants, men, women, and children."

Their color, figure, stature, and aspect are described. They were said to be "well made in the arms, legs, and shoulders; admirably calculated for labor; and are the best slaves I have ever seen."

It was very gratifying to the nation that their first attempt in the frozen North should have been crowned with so much success:—but it was a more substantial, though a basely mercenary motive which induced them again to take the field. Twenty years earlier the southern Africans were pointed out as an article of commerce.

Here alone, then, there was a rich mine of wealth for the nation, and the king eagerly entered into the project, which can thus be traced back to this barbarous suggestion.

The next year Cortoreal departed with two ships on a second voyage. He is described as entering a strait (probably Hudson's), but here a tempest arose, and he was separated from his companions, and never heard of more. When the news of this disaster reached Portugal, his brother set out in search of him;—he never returned, and the deep still holds the secret of the fate of both.

In 1524 the French, for the first time, entered the field of Arctic discovery. In that year, by direction of Francis I, four ships were fitted out, and the command



VERAZZANO.

given to Verazzano, a Florentine, who coasted North America from the latitude 34° to 50° , a distance of 2100 miles, embracing the whole of the present United States, and a large portion of British America. Verazzano had frequent meetings with the natives, and speaks of them in the highest terms. It is thought probable

that he first landed near Savannah, Ga. In his progress northward he records meeting a people as fierce and sullen as the others had been mild and gentle. Along the coast he mentions a cluster of thirty islands, separated by narrow channels, a description which precisely marks the present Bay of Penobscot (Maine). He pursued his course to latitude 50° , when, his provisions failing, he sailed for France, which he reached in safety, July 8, 1524.

In the same year that France made her first attempt in the north, an expedition under Gomez left Spain, with a view of finding a northern and shorter passage to the Moluccas. He appears to have reached the latitude 40° , and, without making any material discovery, returned after a voyage of ten months.

After an interval of ten years, the French again set forth on the career of northern discovery. Jacques Cartier, with two ships, sailed April 20, 1534. He appears to have circumnavigated Newfoundland, and to have proceeded for some time in his course up the Bay of St. Lawrence, being the first European that visited it; but the season being far advanced, he thought it better to reserve, for another voyage, the further examination of what promised to be a glorious field for exploration. He returned, therefore, by the Straits of Belle Isle to St. Malo, where he arrived Sept. 5, 1534.

On May 19, 1535, he again sailed, with three ships, which, soon after their departure, became separated in a storm, and did not meet with each other till July 26, when they proceeded to examine the large gulf which he had formerly entered. "It was," to use Cartier's words, "a very fair gulf, full of islands, passages and entrances, to what wind soever you pleased to bend, having a great

island, like a cape of land, stretching somewhat farther forth than the others."



JACQUES CARTIER.

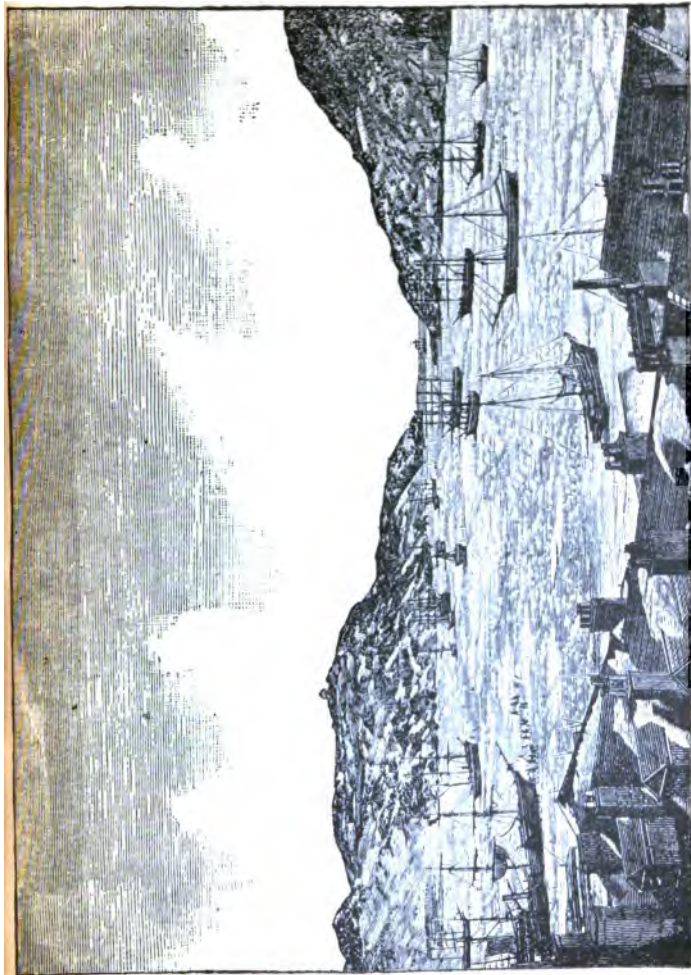
This isle they named Assumption. To the channel between it and the coast of Labrador, Cartier gave the name of St. Lawrence, which has since been extended to

the whole gulf. The French ascended the river as far as the Indian city of Hochelaga, and were friendly received by the Aborigines. Hochelaga was called Mont Royale, since corrupted into Montreal. This discovery was of much importance, but the prejudice then prevailed that no countries were valuable except such as produced gold and silver, and for four years the French monarch would listen to no proposals for the establishment of a colony.

We have seen that for some years the French omitted to follow up the successful issue of Cartier's second voyage; their next attempt was the result of a private adventure. Jean de Roque, the Sieur de Roberval, was given permission to found a settlement in the country, and was made Viceroy in Canada, Hochelga, Saguenay, Newfoundland, Bellisle, Labrador, the Great Bay, etc.; which, if merited by any one, ought to have been conferred upon Cartier. He was given a subordinate command only, and was ordered to set off with five vessels. Cartier received a different reception this time. The Indians resisted, by every means in their power, any attempt at a settlement, and the French were obliged, for their defence, to build a fort near the present site of Quebec.

We have, in the voyage of the Cortoreals, had a sad example of the fatal results of attempts to break asunder all ties of relationship and humanity by forcing the Red Indian to become the slave of his white fellow-creature; it was only by acts of the most signal vengeance that the Western hemisphere was saved from that disagreeable traffic which is the foulest blot in the annals of the Eastern.

It is impossible not to be struck with the determined



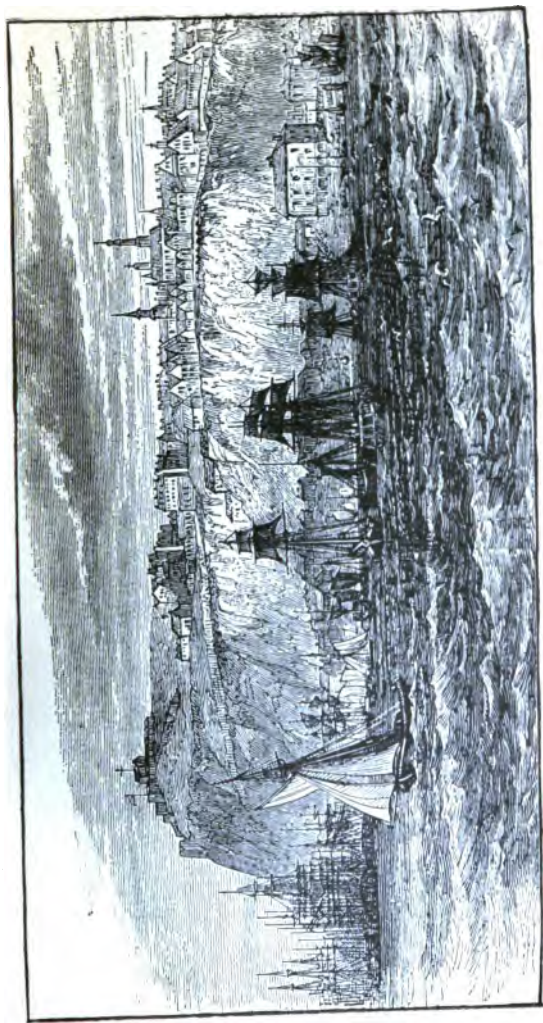
HARBOR OF ST. JOHN'S, NEWFOUNDLAND.

resistance which has ever been made by the aborigines of North America to these kidnapping adventures, and likewise the fact, that the indiscretion of one traveler was visited, at some future period, on the perhaps



INDIAN CHIEFS.

unoffending head of the next who happened to traverse the same path. Through jealousy Cartier deserted Roberval, and this gave a death-blow to the enterprise. In 1549 Roberval, and his brother, made another



QUEBEC.

attempt at a settlement. They were never heard of more.

In 1549 Sebastian Cabot was created Grand Pilot of England, and started in his old age another idea, which has become almost equally momentous in the history of Arctic discovery—the search for a north-eastern route to China. Accordingly, in the year 1553, a squadron of three small vessels were fitted with everything which experience had proven to be necessary, and as a further precaution, the keels were covered with “thinne sheets of leade,” which is the first instance on record in England of the practice of sheathing, a method, however, long before adopted in Spain.

The command was entrusted to Sir Hugh Willoughby, “a most valiant gentleman,” but probably no sailor, Richard Chancellor, and Stephen Burrough, and sailed with the vain hope of reaching India by sailing round North Asia, the formation and vast extent of which were at that time totally unknown.

Off Senjan, an island on the Norwegian coast in lat. $69\frac{1}{2}^{\circ}$, the ships parted company in a stormy night, never to meet again. Willoughby reached the coast of Nova Zembla, and ultimately sought a harbor in Lapland on the west side of the entrance into the White Sea, where the officers and crew were miserably frozen to death, as some Russian fishermen ascertained in the following spring. How long they sustained the severity of the weather is not known, but the journal found on board the *Admiral* proved that Willoughby and most of the ships’s company were alive in January, 1554. “Seventy souls” perished, either through famine or the intense cold. The two ships were recovered, and with the dead bodies in them were sent to England, but on the



MONTREAL.

passage they "sank with their dead, and them also that brought them."

They died the victims of inexperience; for had they "been skilled in hunting and clothing themselves, and taken the precaution of laying in at the beginning of the winter a stock of mossy turf such as the country produces for fuel, and above all had they secured a few of the very many seals which abounded in the sea around them, they might have preserved their lives and passed an endurable winter."

Chancellor was either more fortunate or more skillful, for after having long been buffeted about by stormy weather, he eventually reached St. Nicholas, in the White Sea. From thence he proceeded overland to Moscow and delivered his credentials to the Czar, from whom he obtained many privileges for the company who had fitted out the expedition. In 1554 he returned to England, and shortly afterwards was sent back to Russia by Queen Mary to negotiate a treaty of commerce between the two nations. Accomplishing his mission, he once more set sail from the White Sea, accompanied by a Muscovite ambassador. The return voyage was extremely unfortunate, for Chancellor, after losing two of his vessels off the coast of Norway, was carried by a violent tempest into the Bay of Pitsligo, in Scotland, where his ship was wrecked. He endeavored to save the ambassador and himself in a boat, but the small pinnace was upset; and although the Russian safely reached the strand, the Englishman, after having escaped so many dangers in the Arctic Ocean, was drowned within sight of his native shores.

In 1556 the Muscovy Company fitted out the *Serch-thrift* pinnace, under the command of Stephen Bur-



SIR HUGH WILLOUGHBY,

rough, the master of Chancellor's ship in his first voyage, for discovery toward the River Obi and further search for a north-east passage. This small vessel reached the strait between Nova Zembla and Vaigats, called by the Russians the Kara Gate, but the enormous masses of ice that came floating through the channel compelled it to return.

In spite of these disappointments, the desire to discover a northern route to India was too great to allow enterprising European nations to abandon the scheme as hopeless.

In the days of Queen Elizabeth the question of the North-west Passage was again revived, and Martin Frobisher, who had solicited merchants and nobles during fifteen years for means to undertake "*the only great thing left undone in the world*," sailed in the year 1576 with three small vessels of 35, 30, and 10 tons, on no less an errand than the circumnavigation of Northern America. The reader may smile at the ignorance which encouraged such efforts, but he cannot fail to admire the iron-hearted man who ventured in such wretched nutshells to face the Arctic seas. Experience has since proved that such vessels were better adapted for Arctic exploration than ships of a larger measurement; but this fact was not then known. The expedition safely reached the coasts of Greenland and Labrador, and brought home some glittering stones, the lustre of which was erroneously attributed to gold. This belief so inflamed the zeal for new expeditions to "Meta Incognita," as Frobisher had named the coasts he had discovered, that he found no difficulty in equipping three ships of a much larger size, that they might be able to hold more of the anticipated treasure. At

the entrance of the straits which still bear his name, he was prevented by the gales and drift-ice from forcing



MARTIN FROBISHER.

a passage to the sea beyond, but having secured about 200 tons of the supposed golden ore, the expedition was

considered eminently successful. Special commissioners—gentlemen of great judgment, art, and skill—were appointed by Her Majesty “to look thoroughly into all matters pertaining to this ore.” It was nothing but micaceous sand; but the commissioners made a favorable report, both on the ore, and the prospects of a passage to India; though upon what evidence it was based is not known—the whole proceedings of these functionaries being wrapped up in mystery. A large squadron of fifteen vessels was consequently fitted out in 1578 for a third voyage, and commissioned not only to bring back an untold amount of treasure, but also to take out materials and men to establish a colony on those desolate shores. But this grand expedition, which sailed with such extravagant hopes, was to end in disappointment. One of the largest vessels was crushed by an iceberg at the entrance of the strait, and the others were so beaten about by storms and obstructed by fogs that they were at length glad to return to England without having done anything for the advancement of geographical knowledge. The utter worthlessness of the glittering stones having meanwhile been discovered, Frobisher relinquished all further attempts to push his fortunes in the northern regions, and sought new laurels in a sunnier clime. He accompanied Drake to the West Indies, where he commanded one of the largest vessels opposed to the Spanish Armada, and ended his heroic life while attacking a small French fort in behalf of Henry IV., during the war with the League.

The discovery of the North-western Passage was, however, still the great enterprise of the day, and thus, seven years after Frobisher's disastrous voyage, sundry

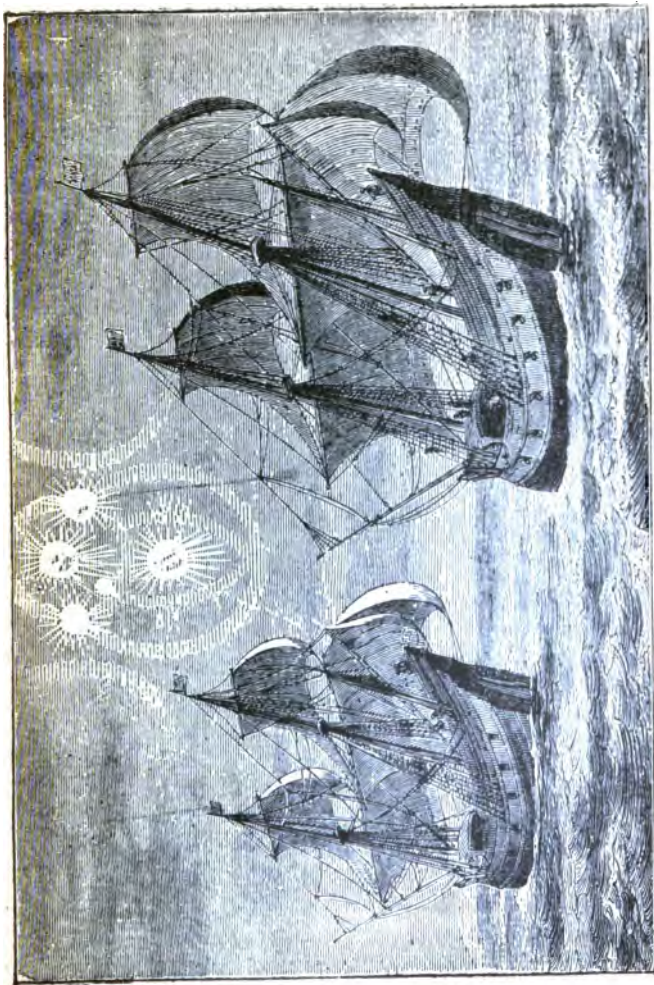
London merchants again "cast in their adventure," and sent out John Davis, in 1585, with his two ships, *Sunshine* and *Moonshine*, carrying, besides their more necessary equipments, a band of music "to cheer and recreate the spirits of the native." Davis arrived in sight of the south-western coast of Greenland, where he saw a high mountain (Sukkertoppen) towering like a cone of silver over the fog which veiled the dismal shore. The voyagers were glad to turn from the gloomy scene, and to steer through the open water to the north-west, where, on August 6, they discovered land in latitude $66^{\circ} 40'$ altogether free from "the pesters of ice, and ankered in a very fair rode." A friendly understanding was established with the Esquimaux, and a lively traffic opened, the natives eagerly giving their skins and furs for beads and knives until a brisk wind separated the strange visitants from their simple-minded friends. The remainder of the season was spent in exploring Cumberland Sound and the entrance to Frobisher's and Hudson's Straits.

The discovery by Davis of a free open passage to the westward, inspired sanguine hopes of the ultimate success of the search. In the year following a second voyage was undertaken by Davis, for which the *Sunshine* and *Moonshine* were again engaged, with two other vessels. On June 29, 1586, he landed on the coast of Greenland, in latitude 64° , and steered to the west. The enormous ice-floes which come drifting from Baffin's Bay until the season is far advanced, opposed his progress. For some days he coasted these floating islands, when a fog came on, during which ropes, sails, and cordage were alike fast frozen, and the seamen, hopeless of accomplishing the passage, warned

their commander that "by his overboldness he might cause their widows and fatherless children to give him bitter curses." Touched by this appeal, Davis ordered two of his ships to return home.

On August 1, he discovered land, latitude $66^{\circ} 33'$ N., and longitude 70° W. Here he was abandoned by his remaining vessels, and proceeded by himself on his voyage. On September 4, in latitude 54° N., Davis states he had "perfect hope of the passage, finding a mightie great sea passing between the two lands west." After this, in consequence of severe weather, he thought it prudent to return home.

On June 16, 1587, we once more find him on the coast of Greenland, in his old tried bark the *Sunshine*, in company with the *Elizabeth* and a pinnace. The supplies for this third voyage were furnished under the express condition that the expenses should be lightened as much as possible by fishing at all suitable times; the two larger ships were stationed for the purpose near the part of the coast which they had formerly visited, while Davis steered forward in the small and ill-conditioned vessel which alone remained at his disposal. He sailed along the Greenland coast as far as 72° latitude, where, having fairly entered Baffin's Bay, he named the point at which he touched Sanderson's Hope, in honor of his chief patron, and then steered to the west, until he once more fell in with the ice-barrier which had prevented his progress the year before. Time and perseverance, however, overcame all obstacles, and by July 19 he had crossed to the opposite side of the strait which bears his name. He then sailed for two days up Cumberland Strait—which, it will be remembered, he discovered on his first expedition—but be-



THE "SUNSHINE" AND THE "MOONSHINE."

lieving this passage to be an inclosed gulf, he returned, and again passing the entrance to Hudson's Bay, without an effort to investigate it, repaired to the rendezvous appointed for the two whaling vessels to meet him on their way to England. Judge of his astonishment and consternation when he found his companions had sailed away, leaving him to find his way home in his miserable pinnace, which, however, landed him safely on his native shores. This was the last of the Arctic voyages of that great navigator, for the spirit of the nation was chilled by his three successive disappointments; and all the zeal with which he pleaded for a fourth expedition proved fruitless. The projected invasion by the Spanish Armada put a stop to everything just then.

He subsequently made five voyages to the East Indies, and was killed on December 27, 1605, on the coast of Malacca, in a fight with the Malays.

Seven years after Davis's last voyage, the Dutch made their first appearance on the scene of Northern discovery. They had just succeeded in casting off the Spanish yoke, and were now striving to gain, by the development of maritime trade, a position among the neighboring States, which the smallness of their territory seemed to deny them. All the known avenues to the treasures of the south were at that time too well guarded by the fleets of Portugal and Spain to admit of any rivalry; but if fortune favored them in finding the yet unexplored northern passage to India, they might still hope to share in that most lucrative of trades.

Animated by this enterprise, some merchants of Amsterdam fitted out in 1594 an expedition in quest of the North-eastern Passage, which they intrusted to the command of Cornelius Corneliszoon, Brant Ysbrantzoon,

and William Barentz, one of the most experienced seamen of the day. The three vessels sailed from the Texel on June 6, and reaching the coast of Lapland, separated into two divisions; Barentz chose the bolder course of coasting the west side of Nova Zembla as far as the islands of Orange, the most northerly points of



BARENTZ'S HOUSE.

the archipelago; while his less adventurous comrades sailed along the Russian coast until they reached a strait, to which they gave the very appropriate name of Vaigats, or "Wind-hole." Forcing their way through the ice, which almost constantly blocks up the entrance to the Kara Sea, they saw, on rounding a promontory

at the other end of the strait, a clear expanse of blue open sea, stretching onward as far as the eye could reach, while the continent trended away rapidly toward the south-east. They believed they had sailed round the famous Cape Tabin—a fabulous headland, which, according to Pliny (an indisputable authority in those times of geographical ignorance), formed the northern extremity of Asia, from whence the voyage was supposed to be easy to its eastern and southern shores. Little did Brant and Cornelius dream that within the Arctic Circle the Asiatic coast still stretched 120° to the east; and fully trusting their erroneous impressions, they started in full sail for Holland, eager to bring to their countrymen the news of their imaginary success. Off Russian Lapland they fell in with Barentz, who, having arrived at the northern extremity of Nova Zembla—a higher latitude than any navigator is recorded to have reached before—had turned back before strong opposing winds and floating ice, and the three vessels returned together to the Texel.

The hopes raised by the discovery of the imaginary Cape Tabin induced the fitting out of a fleet of six ships, laden with all sorts of merchandise fit for the Indian market. A little yacht was added, which was to accompany the fleet as far as that promontory, and thence to return with the good news that the squadron had been left steering with a favorable wind right off to India. As may be supposed, these sanguine hopes were doomed to a woful disappointment, for the "Wind-hole Strait," doing full justice to its name, did not allow the vessels to pass; and after fruitless efforts to force their way through the ice-blocks, they returned

crestfallen to the port whence they had sailed a few months before with such brilliant expectations.

Although great disappointment was felt at this failure, the scheme of sailing round Cape Tabin to India was, however, not abandoned by the persevering Amsterdammers; and on May 16, 1596, a fourth expedition started for the north-east, with Barentz and two others commanding. Bear Island and Spitzbergen were discovered, whereupon the ships separated, two returning to Holland, while Barentz, slowly making his way through the fog and ice, advanced to the most northern point of Nova Zembla, the crew being encouraged by the tidings that from the high cliffs of Orange Island clear open water had been seen to the south-east. The effort to reach this inviting channel was frustrated by the ice, which gathered about the ship as it lay near shore, and gradually collecting under and around it, raised it far above the level of the sea. All hope of return before the next summer now vanished, and here, at the end of August, in latitude 76° N., were seventeen unfortunate creatures doomed to endure all the horrors of the dreary Arctic winter, doubly fearful because unknown.

They started to build a hut, which after great labor was finished on October 2. Each day the cold became more intense. Did they hang up their clothes to dry, the side away from the fire was frozen hard. "It seemed as if the fire had lost all power of conveying heat; their stockings were burned before their feet felt any warmth, and this burning was announced by smell rather than by feeling."

On November 4 the sun disappeared, and with it also a very disagreeable visitor, who put them in great

alarm—the huge white bear. They had, however, the pale light of the moon, and the little Arctic fox, whose flesh they found very palatable. On January 24, 1596, after a darkness of 81 days, the edge of the sun appeared above the horizon, and the sight was a joyful one indeed. The furious snow-storm ceased, and though the severity of the cold continued till April, they were better able to brave the outer air and to recruit their strength by exercise. With the return of daylight the bears came again and some being shot, afforded a supply of grease, so that they were able to burn lamps and pass the time in reading.

When summer returned it was found impossible to disengage the ice-bound vessel, and the only hope of escape rested on two small boats, in which they finally quitted the scene of so much suffering on June 14, 1596. On the fourth day out their barks became surrounded by enormous masses of floating ice, which so crushed and injured them that the crews gave up all hope and took a solemn leave of each other. In this desperate crisis they owed their preservation to the presence of mind and agility of a sailor, who, with a well-secured rope, leaped from one ice-block to another till he reached a larger floe, on which first the sick, then the stores, the crews, and finally the boats themselves were fairly landed. Here they were obliged to remain while the boats underwent the necessary repairs, and during this detention upon a floating ice-raft the gallant Barentz closed the eventful voyage of his life. He died as he had lived, calmly and bravely, thinking less of himself than of the welfare of his fellow-sufferers, for his last words were directions as to the course in which they were to steer. His death was bitterly mourned

by the rough men under his command, and even the prospect of a return to their homes could not console them for the loss of their beloved leader. After a



POLAR BEARS.

tedious passage (for by July 28 they had only reached the southern extremity of Nova Zembla) they at length, at the end of August, arrived at Kola, in Russian Lap-

land, where, to their glad surprise, they found three Dutch ships. Of the 17 men stranded on Nova Zembla, 12 returned to Amsterdam. The natural condition of the high northern regions during winter was made known to us by these voyages.

England tried it once more in 1602, when Weymouth was repulsed by a violent storm, in his attempt to sail up the promising inlet now so well known as the entrance to Hudson's Bay; and, in 1606, a melancholy issue awaited the next expedition, which sailed under the command of John Knight.

In 1607, Hendrick Hudson made the first attempt to sail across the North Pole, a plan started in 1527 by Robert Thorne, but not yet acted upon by any one during the 80 years that had since passed. He reached the east coast of Greenland in 73° of latitude, and then sailed to the northern extremity of Spitzbergen, but all his efforts to launch forth into the unknown ocean beyond were baffled by the ice-fields that opposed his progress.

In his next voyage (1608) he vainly tried for the North-east Passage; but his third voyage (1609), which he performed in the service of the Dutch, led to the discovery of the magnificent river which still bears his name, and at whose mouth the "Empire City" of this great Republic has arisen.

In April, 1610, he sailed on the last and most celebrated of his voyages. In all but its commander, this expedition was miserably inadequate to the object of its mission, for it consisted only of one vessel of 55 tons, provisioned for six months, and manned by a crew who speedily proved unworthy of their leader. On entering Hudson's Straits, the large masses of ice which encumbered the surface of the water and the thickness of the

constant fogs made them lose all courage, and they earnestly begged their commander to return at once to England. But Hudson pressed on until at last his little bark emerged into a vast open water, rippling and sparkling in the morning sunshine. Hudson's Bay expanded before him, and the enraptured discoverer was fully convinced that the north-western route to India now lay open, and that he had succeeded in accomplishing that which had baffled so many before him.

It was the beginning of August, and the dastardly crew considering the passage effected urged an immediate return; but Hudson



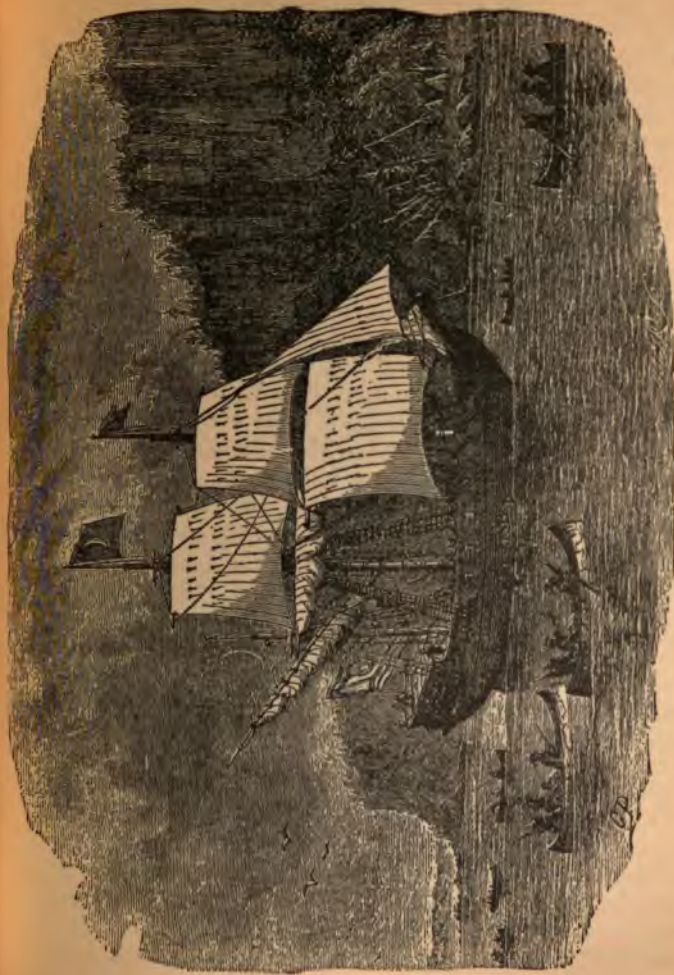
HENDRICK HUDSON.

was determined on completing the adventure, and wintering, if possible, on the sunny shores of India. For three months he continued tracking the south coasts of that vast northern Mediterranean, but all his hopes of finding a new channel opening to the south proved vain, until at length the ship was frozen in on November 10 in the south-east corner of

James's Bay. A dreary winter awaited the ice-bound seamen, with almost exhausted provisions, and unfortunately without that heroic patience and concord which had sustained the courage of Barentz and his companions under trials far more severe. But spring came at last, and revived the spirits of their leader. His ship was once more afloat, once more his fancy indulged in visions of the sunny East, when, as he stepped on deck on the morning of June 21, his arms were suddenly pinioned, and he found himself in the power of three of his men.

Inquiry, remonstrance, entreaty, command, all failed to draw a word from the stubborn mutineers, and Hudson resigned himself bravely to his fate, and, with the quiet dignity of a noble nature, looked on calmly at the ominous preparations going forward. A small open boat was in waiting, and into this Hudson—his hands being previously tied behind his back—was lowered; some powder and shot and the carpenter's box came next, followed by the carpenter himself, John King, whose name ought to be held in honorable remembrance, as he alone among the crew remained true to his master. Six invalids were also forced into the boat, which was then cut adrift, and the vessel sailed onward on its homeward course. Nothing more was ever heard of Hudson; but the ringleaders of that dark conspiracy soon paid a terrible penalty. Some fell in a fight with the Esquimaux, and others died on the homeward voyage, during which they suffered from the extremest famine.

Thus miserably perished a man, of whom it has been truly said, that he was, "in point of Skill, inferior to few; in regard to Courage, surpassed by none, and in point of Industry and Labor, hardly equalled by any."



THE "HALF MOON" IN THE HUDSON RIVER.

The account of the great expanse of sea which had been reached gave new vigor to the spirit of discovery, and new expeditions sallied forth (Thomas Button, 1612, Gibbons, 1614, Bylot, 1615), to seek along the western shores of Hudson's Bay the passage which was to open the way to India. All efforts in this direction were of course doomed to disappointment, but Baffin, who sailed in 1616, with directions to try his fortune beyond Davis's Straits, enriched geography with a new and important conquest by sailing round the enormous bay which will bear his name as long as honest worth shall be recognized in the world. During this voyage he discovered the entrances to Smith's, Jones's, and Lancaster Sounds, without attempting to investigate these broad highways to fields of later exploration. He believed them to be mere inclosed gulfs, and this belief became so firmly grounded in the public mind that two full centuries elapsed before any new attempt was made to seek for a western passage in this direction, while Jens Munk, a Dane, sent out in 1619 with two good vessels, under the patronage of his king, Christian IV; Fox and James (1631-1632), Knight and Barlow (1719), Middleton (1741), Moor and Smith (1746), confined their efforts to Hudson's Bay, and, by their repeated disappointments, made all expeditions in quest of a north-western passage appear well-nigh as chimerical as those of the knights-errant of romance.

Vitus Behring, a Dane by birth, but an officer in the Russian navy, was sent by the Empress Catherine, from St. Petersburg, on February 5, 1725, to explore the Sea of Kamtchatka. During this voyage, which occupied several years, he discovered Behring's Strait (1728), and ascertained that Asia was not joined to America. In a sub-



CAPTAIN JAMES COOK.
(Who first Circumnavigated the Globe.)

sequent voyage he was wrecked on Behring's Island, where he died of scurvy, on September 8, 1741.

Behring Sea, or the Sea of Kamtchatka, is the most northern part of the Pacific Ocean, extending between the peninsulas of Alaska and Kamtchatka. It is connected by Behring Strait with the Arctic Ocean. Its width is about 45 miles at the narrowest part, between East Cape (Asia) and Cape Prince of Wales (America). Its depth in the middle is about 180 feet.

CHAPTER III.

VOYAGES FROM BAFFIN TO MCCLINTOCK.

THE failure of Captain Phipps in the Spitzbergen seas (1773), and that of the illustrious Cook (1776), in his attempt to circumnavigate the northern shores of America or Asia, by way of the Straits of Behring, entirely damped for the next 40 years the spirit of Arctic discovery; but hope revived when it became known that Captain Scoresby, on a whaling expedition in the Greenland seas (1806), had attained $81^{\circ} 30'$ N. latitude, and thus approached the Pole to within 540 miles. No previous navigator had ever reached so far to the north; an open sea lay temptingly before him and the absence of the ice-blink proved that for miles beyond the visible horizon no ice-field or snow-covered land opposed his onward course; but as his object was strictly commercial, and he himself answerable to the owners of the vessel, he felt obliged to sacrifice his inclinations to his duty, and to steer again to the south.

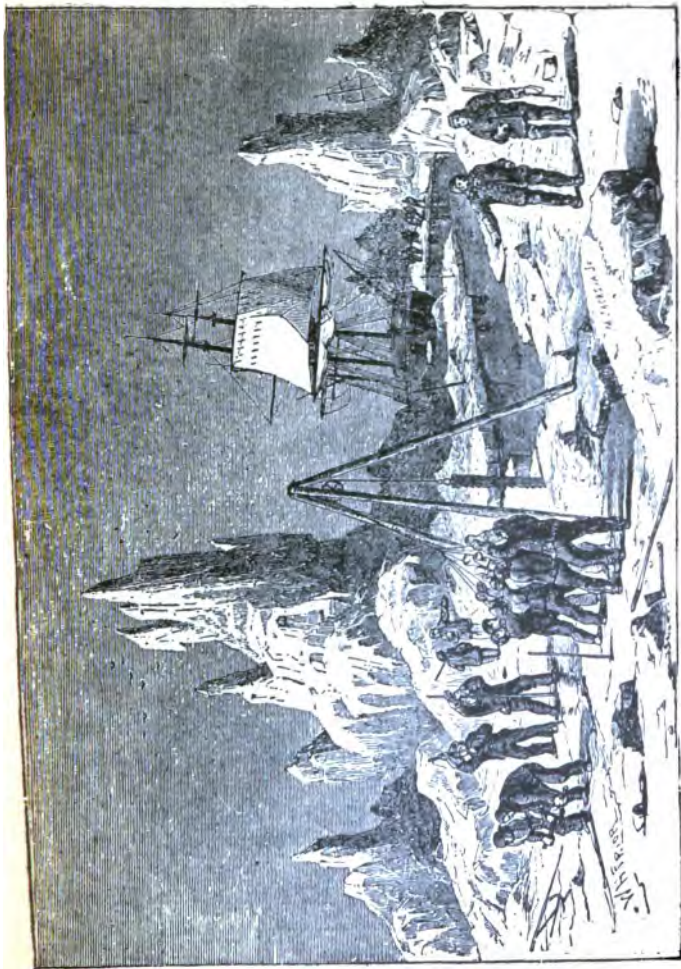
During the continental war, England had no leisure

for discoveries in the Arctic Ocean ; but not long after the conclusion of peace, four stout vessels (1818) were sent out by the Government. Two of these, the *Dorothea*, Captain Buchan, and the *Trent*, Commander John Franklin, endeavored to cross the Polar Sea. After unnumbered difficulties, the expedition was battling with the ice to the north-west of Spitzbergen, when, on July 30, a sudden gale compelled the commander, as the only chance of safety, to "take the ice"—that is, thrust the ships into any opening among the moving masses that could be perceived. In this very hazardous operation, the *Dorothea* was so injured that she was in danger of sinking, and was therefore turned homewards as soon as the storm subsided, and the *Trent* of necessity accompanied her.

The other two ships which sailed in the same year, the *Isabella*, commanded by John Ross, and the *Alexander*, by William Edward Parry, had been ordered to proceed up the middle of Davis's Strait to a high northern latitude, and then to stretch across to the westward, in the hope of reaching Behring's Strait by that route. This expedition ended in disappointment ; for though Ross defined more clearly the Greenland coast to the north of the Danish possessions between Cape Melville and Smith's Sound, he was satisfied with making a very cursory examination of all the great channels leading from Baffin's Bay into the Polar Sea. After sailing for some little distance up Lancaster Sound, he was arrested by the atmospheric deception of a range of mountains, extending across the passage, and concluding it useless to persevere, he abandoned a course which was to render his successor illustrious. The manner in which Ross had conducted this expedition failed to satisfy the

authorities at home; and, in the following year, the *Hecla*, commanded by Parry, and the *Griper*, under Matthew Liddon, were commissioned for the purpose of exploring the sound, whose entrance only had been seen by Baffin and Ross.

With this brilliant voyage, the epoch of modern discoveries in the Arctic Ocean may properly be said to begin. Sailing right through Lancaster Sound, over the site of Ross's imaginary Croker Mountains, Parry passed Barrow's Strait, and after exploring Prince Regent's Inlet, whence the ice compelled him to return to the main channel, he discovered Wellington Channel (August 22, 1818), and soon after had the satisfaction of announcing to his men that, having reached 110° W. longitude, they were entitled to the bounty of \$25,000, secured to "such of His Majesty's subjects as might succeed in penetrating thus far to the west within the Arctic Circle." After passing and naming Melville Island, a little progress was still made westward; but the ice was now rapidly gathering, the vessels were soon beset, and, after getting free with great difficulty, Parry was only too glad to turn back and settle down in Winter Harbor. It was no easy task to attain this dreary port, as a canal over two miles in length had first to be cut through solid ice of seven inches average thickness; yet such was the energy of the men that it was executed in three days. The two vessels were immediately unrigged, the decks housed over, a heating apparatus arranged, and everything made as comfortable as possible. To relieve the monotony of the long winter's night, plays were acted, a school established, and a newspaper set on foot—certainly the first periodical ever issued in so high a latitude. During the day



PARRY'S CREW CUTTING A PASSAGE THROUGH THE ICE.

the men were employed for exercise in banking up the ships with snow or making excursions within a certain distance; and when the weather forbade their leaving shelter, they were obliged to run round the decks to the tune of a barrel-organ.

The cold became more and more intense. It was 51° below zero in the open air on January 12, 1819, and on the 14th the thermometer fell to 54° .

February 3, 1819, was a memorable day—the sun being visible from the maintop of the *Hecla*, from whence it was last seen on November 11, 1818, eighty-four days before. The weather grew milder in March; on the 6th the thermometer rose to zero, for the first time since December 17, and on April 30 it stood at the freezing-point, which it had not reached since September 12 of the previous year.

May appeared, bringing the long summer's day of the high northern latitudes; but as many a week must still pass before the vessels could move out of their ice-bound harbor, Parry started on June 1, 1819, to explore the interior of the island, which at this early period of the season still wore a dreary aspect. Such was the rapidity of vegetation, that by the end of the month the land, now completely clear of snow, was covered with the purple-colored saxifrage in blossom, with mosses, and with sorrel, and the grass was from two to three inches long. The pasturage appeared to be excellent in the valleys, and to judge by the numerous tracks of musk-oxen and reindeer, there were animals enough to enjoy its abundance.

It was not before August 1 that the ships were released from their ten months' blockade in Winter Harbor, when Parry once more stood boldly for the west;

but no amount of skill or patience could penetrate the obstinate masses of ice that blocked the passage, or insure the safety of the vessels under the repeated shocks sustained from them. Finding the barriers insuperable, he gave way, and steering homeward, reached London on November 3, 1820, and was enthusiastically received.

While Parry was engaged on this wonderful voyage, John Franklin and Dr. Richardson, accompanied by two midshipmen, George Back and Robert Hood, and a sailor, John Hepburn, to whom were added during the course of the journey a troop of Canadians and Indians, were penetrating by land to the mouth of the Coppermine River for the purpose of examining the unexplored shores of the Polar Sea to the east. An idea of their difficulties may be formed when it is mentioned that the travelers started from Fort York, Hudson's Bay, on August 30, 1819, and after a boat voyage of 700 miles up the Saskatchewan arrived before winter at Fort Cumberland. The next winter found them 700 miles farther on their journey, established during the extreme cold at Fort Enterprise, as they called a log-house built by them on Winter Lake, where they spent 10 months, depending upon fishing and the success of their Indian hunters. During the summer of 1821, they accomplished the remaining 334 miles to the mouth of the Coppermine, and on July 21 Franklin and his party embarked in two birch-bark canoes on their voyage of exploration. In these frail shallops they skirted the desolate coast of the American continent 555 miles to the east of the Coppermine as far as Point Turnagain, when the rapid decrease of their provisions and the shattered state of the canoes compelled their return (August 22). And now began a dreadful

land-journey of two months, accompanied by all the horrors of cold, famine, and fatigue. An esculent lichen (*tripe de roche*), with an occasional ptarmigan, formed their scanty food, but on many days even this poor supply could not be obtained, and their appetites became ravenous. Sometimes they had the good fortune to pick up pieces of skin, and a few bones of deer which had been devoured by the wolves in the previous spring. The bones were rendered friable by burning, and now and then their old shoes were added to the repast. On reaching the Coppermine, a raft had to be framed, a task accomplished with difficulty by the exhausted party. One or two of the Canadians had already fallen behind, and never rejoined their comrades, and now Hood and three or four more of the party broke down and could proceed no farther, Richardson volunteering to remain with them, while Back, with the most vigorous of the men, pushed on to send succor from Fort Enterprise, and Franklin followed more slowly with the others. On reaching the log house they found it desolate, with no deposit of provisions and no trace of the Indians whom they had expected to meet there. "It would be impossible," says Franklin, "to describe our sensations after entering this miserable abode and discovering how we had been neglected; the whole party shed tears, not so much for our own fate as for that of our friends in the rear, whose lives depended entirely on our sending immediate relief from this place." Their only consolation was a gleam of hope afforded them by a note from Back, stating that he had reached the deserted hut two days before, and was going in search of the Indians. The fortunate discovery of some cast-off deer-skins and



EDWARD PARRY AND GEORGE BACK.

of a heap of acrid bones, a provision worthy of the place, sustained their flickering life-flame, and after 18 miserable days they were joined by Richardson and Hepburn, the sole survivors of their party.

"Upon entering the desolate dwelling," says Richardson, "we had the satisfaction of embracing Franklin, but no words can convey an idea of the filth and wretchedness that met our eyes on looking around. Our own misery had stolen upon us by degrees, and we were accustomed to the contemplation of each other's emaciated figures; but the ghastly countenances, dilated eyeballs, and sepulchral voices of Franklin and those with him were more than we could at first bear." At length, on November 7, when the few survivors of the ill-fated expedition (for most of the voyagers died from sheer exhaustion) were on the point of sinking under their sufferings, three Indians, sent by Back, brought them the succor they had so long been waiting for. The eagerness with which they feasted on dried meat and tongues brought on severe pains in the stomach which soon warned them that after so long an abstinence they must be careful in the quantity of food taken. In a fortnight's time they had recruited their strength and joined Back at Moose Deer Island, and in the following year they returned to England.

Parry's second voyage of discovery (1821-1823) was undertaken for the purpose of ascertaining whether a communication might be found between Regent's Inlet and Rowe's Welcome, or through Repulse Bay and thence to the north-western shores of America. The first summer (1821) was spent in the vain attempt of forcing a way through Frozen Strait, Repulse Bay, the large masses of ice in these waters holding the ships

helplessly in their grasp, and often carrying them back in a few days to the very spot which they had left a month before. Owing to these rebuffs, the season came to an end while their enterprise was yet scarcely begun, and the ships took up their quarters in an open roadstead at Winter Island to the south of Melville Peninsula. The monotony of the winter was pleasantly broken during February by friendly visits from a party of Esquimaux. Among these was a young woman whose quickness of comprehension enabled her to become an interpreter between her people and the English. The nature of a map having been explained to her, she sketched with chalk upon the deck the outlines of the adjoining coast, and delineated the whole eastern shore of Melville Peninsula, rounding its northern extremity by a large island and a strait of sufficient magnitude to afford a safe passage for the ships. This information greatly encouraged the whole party, which already fancied the worst part of their voyage overcome, and its truth was eagerly tested on July 2, as soon as the ships could once more be set afloat.

After running great dangers from the ice, they reached the small island of Igloodik, near the entrance of the channel, the situation of which had been accurately laid down by the Esquimau woman. But all their efforts to force a passage through the narrow strait proved vain, for after struggling 65 days to get forward, they had only in that time reached 40 miles to the westward of Igloodik. The vessels were therefore again placed in winter-quarters in a channel between Igloodik and the land; but having ascertained by boat excursions the termination of the strait, Parry thought it so promising for the ensuing summer that he at once

named it the "Hecla and Fury Strait." But his hopes were once more doomed to disappointment by the ice-obstructed channel, and he found it impossible to pass through it with his ships. His return to England with his crews in health, after two winters in the high latitudes, was another triumph of judgment and discipline.

In the following year two new expeditions set out. Captain Lyon was sent out in the *Griper*, with orders to land at Wager River, off Repulse Bay, and thence to cross Melville Peninsula, and proceed overland to Point Turnagain, where Franklin's journey ended. But a succession of dreadful storms so crippled the *Griper*, that it necessarily returned to England.

Such was the esteem Parry had acquired among the companions of his two former voyages, that when he took the command of a third expedition, to seek a passage through Prince Regent's Inlet, they all volunteered to accompany him. From the middle of July till nearly the middle of September (1824), the *Hecla* and the *Fury* had to contend with the enormous ice-masses of Baffin's Bay, which would certainly have crushed vessels less stoutly ribbed; and thus it was September 10 before they entered Lancaster Sound, which they found clear of ice, except here and there a solitary berg. But new ice now began to form, which, increasing daily in thickness, beset the ship, and carried them once more back again into Baffin's Bay. By perseverance and the aid of a strong easterly breeze, Parry regained the lost ground, and on the 27th reached the entrance of Port Bowen, on the eastern shore of Prince Regent's Inlet, where he passed the winter. By July 19, 1825, the vessels were again free; and Parry now sailed across the inlet to examine the coast of North

Somerset; but the floating ice so injured the *Fury* that it was found necessary to abandon her. Her crew and valuables were therefore transferred to the *Hecla*; the provisions, stores, and boats were landed, and safely housed on Fury Point, off North Somerset, for the relief of any wandering Esquimaux or future Arctic explorers who might chance to visit the spot, and the crippled ship was given up to the mercy of the ice, while her companion made the best of her way to England.

In spite of the dreadful sufferings of Franklin, Richardson and Back during their first land journey, we find these heroes once more setting forth in 1825, determined to resume the survey of the Arctic coasts. Adequate preparation was made for the necessities of their journey; and before they settled down for the winter at "Fort Franklin," on the shores of Great Bear Lake, a journey of investigation down the Mackenzie River to the sea had been brought to a successful end. As soon as the ice broke in the following summer, they set out in four boats, and separated at the point where the river divides into two main branches, Franklin and Back proposing to survey the coast-line to the westward, while Richardson set out in an easterly direction to the mouth of the Coppermine River. Franklin arrived at the mouth of the Mackenzie on July 7, 1826, where a large tribe of Esquimaux pillaged his boats, and it was only by great prudence and forbearance that the whole party were not massacred. A full month was now spent in the tedious survey of 374 miles of coast, as far as Return Reef, more than 1000 miles distant from their winter-quarters on Great Bear Lake. The return journey to Fort Franklin was safely accomplished, and they

arrived at their house on September 21, where they had the pleasure of finding Richardson, who had reached the Coppermine, thus connecting Franklin's former discoveries to the eastward in Coronation Gulf with those made by him on this occasion to the westward of the Mackenzie. The cold during the second winter at Fort Franklin was intense, the thermometer standing at one time at 58° below zero; but the comfort they now enjoyed formed a most pleasant contrast to the squalid misery of Fort Enterprise.

When Franklin left England to proceed on this expedition, his first wife was then lying at the point of death, and indeed expired the day after his departure. But with heroic fortitude she urged him to set out on the very day appointed, entreating him, as he valued her peace and his own glory, not to delay a moment on her account. His feelings may be imagined when he raised on Garry Island a silk flag which she had made and given him as a parting gift, with the instruction that he was only to hoist it on reaching the Polar Sea.

While Parry and Franklin were thus searching for a western passage, a sea expedition under Captain Beechey had been sent to Behring's Straits to co-operate with them, so as to furnish provisions to the former and a conveyance home to the latter—a task more easily planned than executed; and thus we cannot wonder that when the *Blossom* reached the appointed place of rendezvous at Chamisso Island, in Kotzebue Sound (July 25, 1826), she found neither Parry (who had long since returned to England) nor Franklin.

In the year 1827 the indefatigable Parry undertook one of the most extraordinary voyages ever performed

by man; being no less than an attempt to reach the North Pole by boat and sledge-traveling over the ice. His hopes of success were founded on Crosby's authority, who reported having seen ice-fields so free from either



PARRY JOURNEYING ON THE ICE.

fissure or hummock, that had they not been covered with snow, a coach might have been driven many leagues over them in a direct line; but when Parry reached the ice-fields to the north of Spitzbergen, he found them of a very different nature, composed of

loose, rugged masses, intermixed with pools of water, which rendered traveling over them extremely arduous and slow. The strong, flat-bottomed boats, specially prepared for an amphibious journey, with a runner attached to each side of the keel, so as to adapt them for sledging, had thus frequently to be laden and unladen, in order to be raised over the hummocks, and repeated journeys backward and forward over the same ground were the necessary consequence. Frequently the crew had to go on hands and knees to secure a footing. Heavy showers of rain often rendered the surface of the ice a mass of slush, and in some places the ice took the form of sharp-pointed crystals, which cut the boots like penknives. But in spite of all these obstacles, they toiled cheerfully on, until at length, after 35 days of incessant drudgery, the discovery was made that, while they were apparently advancing toward the Pole, the ice-field on which they were traveling was drifting to the south, and thus rendering all their exertions fruitless. Yet, though disappointed in his hope of planting his country's standard on the northern axis of the globe, Parry had the glory of reaching the highest authenticated latitude ever yet attained ($82^{\circ} 40' 30''$). On their return to the *Hecla*, which awaited them in Treurenberg Bay, on the northern coast of Spitzbergen, the boats encountered a dreadful storm on the open sea, which obliged them to bear up for Walden Island—one of the most northerly rocks of the archipelago—where, fortunately, a reserve supply of provisions had been deposited. "Everything belonging to us," says Parry, "was now completely drenched by the spray and snow; we had been 56 hours without rest, and 48 at work in the boats, so that by the time they were unloaded we had

barely strength to haul them up on the rocks. However, by great exertion, we managed to get the boats above the surf, after which a hot supper, a blazing fire of drift-wood, and a few hours' quiet rest restored us." He who laments over the degeneracy of the human race, and supposes it to have been more vigorous or endowed with greater powers of endurance in ancient times, may perhaps come to a different opinion when reading of Parry and his companions.

Thus ended the last of this great navigator's Arctic voyages. In his 28th year he discovered Melville Island, and his subsequent expedition confirmed the excellent reputation he had acquired by his first brilliant success. From the years 1829 to 1834 we find him in New South Wales. In 1837 he was organizing the mail-packet service, and was finally appointed Governor of Greenwich Hospital. He died in the summer of 1855 at Ems.

Ten years had elapsed since John Ross's first unsuccessful voyage, when the veteran seaman, anxious to obliterate the reproach of former failure by some worthy achievement, was able to accomplish his wishes. A small steamer, named the *Victory*, was purchased for the voyage, an unfortunate selection, for nothing can be more unpractical than paddle-boxes among ice-blocks; but to make amends for this error, Ross was fortunate in being accompanied by his nephew, James Ross, who, with every quality of the seaman, united the zeal of an able naturalist. He it was who, by his well-executed sledge journeys, made the chief discoveries of the expedition; but the voyage of the *Victory* is far less remarkable for successes achieved than for its unexampled protraction during a period of five years.

The first season ended well. On August 10, 1829, the *Victory* entered Prince Regent's Inlet, and reached on the 13th the spot where Parry, on his third voyage, had been obliged to abandon the *Fury*. The ship itself had been swept away; but all her sails, stores, and provisions on land were found untouched. The hermetically sealed tin cans in which the stores were packed had preserved them from the attacks of the white bears, and they were found as good after four years as they had been on the day when they were abandoned. It was to this discovery that the crew of the *Victory* owed their subsequent preservation, for how else could they have passed four winters in the Arctic wastes?

On August 15 Cape Garry was attained, the most southern point of the inlet which Parry had reached on his third voyage. Fogs and drift-ice greatly retarded the progress of the expedition, but Ross moved on, though slowly, so that by September 15 he had gone over some 500 miles of newly-discovered coast. But now, at the beginning of winter, the *Victory* was obliged to take refuge in Felix Harbor, where the useless steam-engine was thrown overboard, and the usual preparations made for spending the cold season as pleasantly as possible.

The following spring (from May 17 to June 13, 1830,) was employed by James Ross on a sledge journey, which led to the discovery of King William's Sound and King William's Land, and during which that courageous mariner penetrated so far to the west that he had only ten days' provisions for a return voyage of 200 miles through an empty wilderness.

After twelve months' imprisonment the *Victory* was released from the ice on September 17, and proceeded

once more on her discoveries. But the period of her liberty was short, for, after advancing three miles in one continual battle against the currents and the drift-ice, she again froze fast on the 27th.

In the following spring James Ross extended the circle of his sledge excursions, and planted the British flag on the site of the Northern Magnetic Pole—which, however, is not invariably fixed to one spot, as was then believed, but moves from place to place within the glacial zone.

On August 28, 1831, the *Victory*—after a second imprisonment of eleven months—was warped into open water; but after spending a month to advance four miles, she was encompassed by the ice September 27, and once more fettered in the dreary wilderness.

As there seemed no prospect of extricating her next summer, they resolved to abandon her and travel over the ice to Fury Beach, there to avail themselves of the boats, provisions, and stores, which would assist them in reaching Davis's Straits. Accordingly, on May 29, 1832, the colors of the *Victory* were hoisted and nailed to the mast, and after drinking a parting glass to the ship with the crew, and having seen every man out in the evening, the captain took his own leave of her. "It was the first vessel," says Ross, "that I had ever been obliged to abandon, after having served in thirty-six during a period of 42 years. It was like the last parting with an old friend, and I did not pass the point where she ceased to be visible without stopping to take a sketch of this melancholy desert, rendered more melancholy by the solitary, abandoned, helpless home of our past years, fixed in immovable ice, till time should perform on her his usual work."

After having, with incredible difficulty, reached Fury Beach, where, thanks to Parry's forethought, they fortunately found a sufficient number of boats left for their purpose, and all the provisions in good condition, they set out on August 1—a considerable extent of open sea being visible—and after much buffeting among the ice, reached the north of the inlet by the end of the month. But here they were doomed to disappointment, for, after several fruitless attempts to run along Barrow's Strait, the ice obliged them to haul their boats on shore and pitch their tents. Day after day they lingered till the third week in September, but the strait continuing one impenetrable mass of ice, it was unanimously agreed that their only resource was to fall back again on the stores at Fury Beach, and there spend a fourth long winter within the Arctic Circle. They were only able to get half the distance in the boats, which were hauled on shore in Batty Bay on September 24, and performed the rest of their journey on foot, the provisions being dragged in sledges. On October 7, they once more reached the canvas hut, dignified with the name of "Somerset House," which they had erected in July on the scene of the *Fury's* wreck, and which they had vainly hoped never to see again.

They now set about building a snow-wall four feet thick round their dwelling, and strengthening the roof with spars, for the purpose of covering it with snow, and by means of this shelter, and an additional stove, made themselves tolerably comfortable, until the increasing severity of the cold and the furious gales confined them within-doors, and sorely tried their patience. Scurvy now began to appear, and several of the men fell victims to the scourge. At the same time, cares for

the future darkened the gloom of their situation ; for, should they be disappointed in their hopes of escaping in the ensuing summer, their failing strength and diminishing stores gave them but little hope of surviving another year.

It may be imagined how anxiously the movements of the ice were watched when the next season opened, and with what beating hearts they embarked at Batty Bay on August 15. Making their way slowly among the masses of ice with which the inlet was encumbered, they to their great joy found, on the 17th, the wide expanse of Barrow's Strait open to navigation.

Pushing on with renewed spirits, Cape York soon lay behind them, and, alternately rowing and sailing, on the night of the 25th they rested in a good harbor on the eastern shore of Navy Board Inlet. Early next morning they were roused from their slumber by the joyful intelligence of a ship being in sight, and never did men more hurriedly and energetically set out ; but the elements were against them, and the ship disappeared in the distant haze.

After a few hours' suspense, the sight of another vessel lying to in a calm relieved their despair. This time their exertions were successful, and, strange to say, the ship which took them on board was the same *Isabella*—now reduced to the rank of a private whaler—in which Ross had made his first voyage to the Arctic Sea.

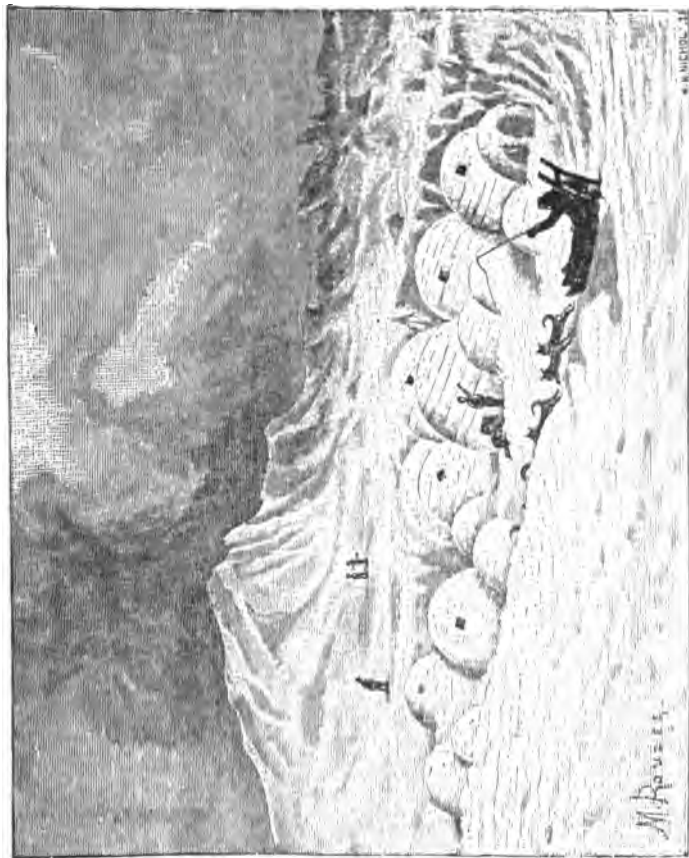
The seamen of the *Isabella* told him of his own death—of which all England was persuaded—and could hardly believe that it was really he and his party who now stood before them. But when all doubts were cleared away, the rigging was instantly manned to do them honor, and

thundering cheers welcomed Ross and his gallant band on board.

The *Isabella* remained some time longer in Baffin's Bay to prosecute the fishery, and thus our Arctic voyagers did not return to England before October 15, 1833, when they were received as men risen from the grave. Wherever Ross appeared, he was escorted by a crowd of sympathizers; orders, medals, and diplomas from foreign States and learned societies rained down upon him. London and Liverpool presented him with the freedom of their cities; he received the honor of knighthood; and Parliament granted him \$25,000 as a remuneration for his pecuniary outlay and privations.

It may be imagined that his long absence had not been allowed to pass without awakening a strong desire to bring him aid and assistance. Thus, when Captain Back volunteered to lead a land expedition in quest of Ross to the northern shore of America, \$20,000 were immediately raised by public subscription to defray expenses. While deep in the American wilds, Back was gratified to learn that Ross had safely arrived in England; but, instead of returning home, he resolved to trace the unknown course of the Great Fish River, down to the distant outlet where it pours its waters into the Polar seas.

It would take a volume to relate his adventures in this expedition, the numberless falls, cascades, and rapids that obstructed his progress; the storms and snow-drifts, the horrors of the deserts through which he forced his way, until he finally (June 28, 1833) reached the mouth of the river, or, rather, the broad estuary through which it disembogues itself into the Polar Sea.



SNOW HOUSES.

The Fish River has since been named Back's River, in honor of its discoverer; and surely no geographical distinction has ever been more justly merited.

The land expedition sent out by the Hudson's Bay Company (1837-1839), under the direction of Peter Dease, one of their chief factors, and Thomas Simpson, proved more successful. Descending the Mackenzie to the sea, they surveyed, in July, 1837, that part of the northern coast of America which had been left unexamined by Franklin in 1825, from Return Reef to Cape Barrow.

Although it was the height of summer, the ground was found frozen several inches below the surface, and the spray froze on the oars and rigging of their boats, which the drift-ice along the shore ultimately obliged them to leave behind.

As they went onward on foot, heavily laden, the frequent necessity of wading up to the middle in the ice-cold water of the inlets, together with the constant fogs and the sharp north wind, tried their powers of endurance to the utmost; but Simpson, the hero of the expedition, was not to be deterred by anything short of absolute impossibility; nor did he stop till he had reached Point Barrow. Indeed; no man could be more fit than he to lead an expedition like this, for he had once before traveled 2000 miles on foot in the middle of winter from York Factory to Athabasca, walking sometimes not less than 50 miles in one day, and without any protection against the cold but an ordinary cloth mantle.

After wintering at Fort Confidence, on Great Bear Lake, the next season was profitably employed in descending the Coppermine River, and tracing nearly 140

miles of new coast beyond Cape Turnagain, the limit of Franklin's survey in 1821. The third season (1839) was still more favored by fortune, for Simpson succeeded in discovering the whole coast beyond Cape Turnagain as far as Castor and Pollux River (August 20, 1839), on the eastern side of the vast arm of the sea which receives the waters of the Great Fish River. On his return voyage, he traced 60 miles of the south coast of King William's Island, and a great part of the high, bold shores of Victoria Land, and reached Fort Confidence on September 24, after one of the longest and most successful boat voyages ever performed in the Polar waters, having traversed more than 1600 miles of sea.

Unfortunately he was not destined to reap the rewards of his labor, for in the following year, while traveling from the Red River to the Mississippi, where he intended to embark for England, he was assassinated by his Indian guides; and thus died, aged 36, one of the best men that have ever served the cause of science in the frozen North.

CHAPTER IV.

SIR JOHN FRANKLIN AND THE NORTH-WEST PASSAGE.

ON May 26, 1845, Sir John Franklin, now in the sixtieth year of his age, and Captain Crozier, sailed from England to make a new attempt at the North-west Passage. Never did stouter vessels than the *Erebus* and *Terror*, well-tried in the Antarctic Seas, carry a finer or more ably-commanded crew; never before had human foresight so strained all her resources to insure

success; and thus, when the commander's last despatches from the Whalefish Islands, Baffin's Bay (July 12), previous to his sailing to Lancaster Sound, arrived in England, no one doubted but that he was about to



A RUDDER CRUSHED BY ICE.

add a new and brilliant chapter to the history of Arctic discovery.

His return was confidently expected toward the end of 1847; but when the winter passed and still no tidings came, the anxiety at his prolonged absence became general, and the early part of 1848 wit-

nessed the beginning of a series of searching expeditions fitted out at the public cost or by private munificence, on a scale exceeding all former examples. The *Plover* and the *Herald* (1848) were sent to Behring's Straits to meet Franklin with supplies, should he succeed in getting

thither. In the spring John Richardson hurried to the shores of the Polar Sea, anxious to find the traces of his lost friend. He was accompanied by Dr. Rae, who had just returned from the memorable land expedition (1846-47), during which, after crossing the isthmus which joins Melville Peninsula to the mainland, he traced the shores of Committee Bay and the east coast of Boothia as far as the Lord Mayor's Bay of John Ross, thus proving that desolate land to be likewise a vast peninsula.

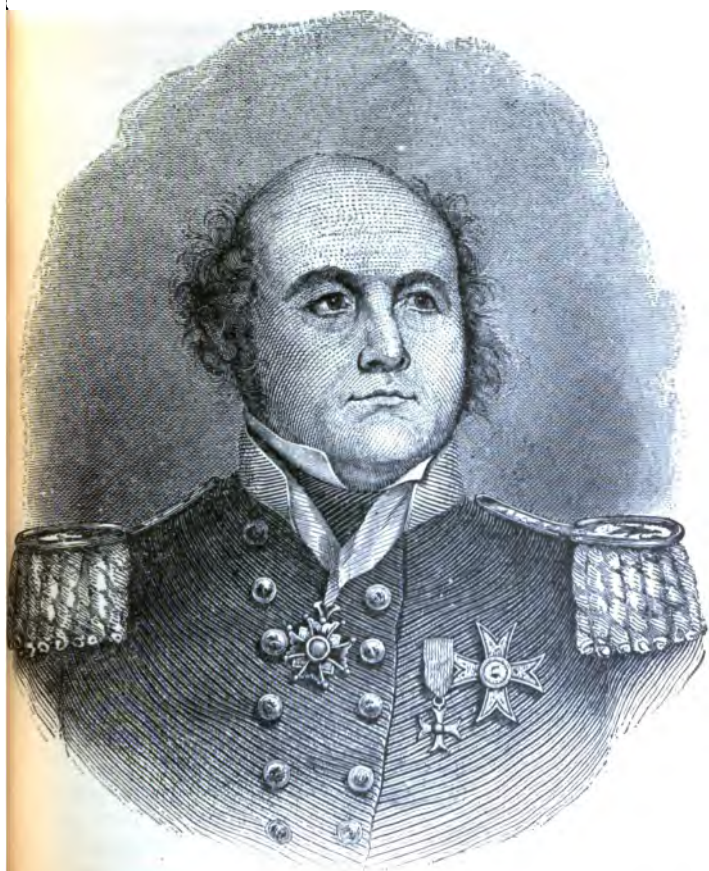
But in vain did Rae and Richardson explore all the coasts between the Mackenzie and the Coppermine. The desert remained mute; and James Ross (*Enterprise*) and Captain Bird (*Investigator*), who set sail in June, 1848, three months after Richardson's departure, and minutely examined all the shores near Barrow's Strait, proved equally unsuccessful.

Three years had now passed since Franklin had been expected home, and even the most sanguine began to despair; but to remove all doubts, it was resolved to explore once more all the gulfs and channels of the Polar Sea. Thus in the year 1850 no less than twelve ships sailed forth, some to Behring's Straits, some to the sounds leading from Baffin's Bay.* Other expeditions

- * 1850-1854. *Investigator*, Captain McClure, } Behring's Straits.
- 1850-1855. *Enterprise*, Captain Collinson, }
- 1850, 1851. *Resolute*, Captain Austin, } Lancaster Strait and
- 1850, 1851. *Assistance*, Captain Ommaney, } Cornwallis Island.
- 1850, 1851. *Lady Franklin*, Master Penny, accompanied by the *Sophia*,
Master A. Stewart, under Admiralty Orders, to Lan-
caster Strait and Wellington Channel.
- 1850, *Prince Albert*, Captain Forsyth, belonging to Lady Frank-
lin, to Regent's Inlet and Beechey Island.
- 1850, 1851. *Advance*, Lieutenant De Haven, } U. S. Navy.
- 1850, 1851. *Rescue*, S. P. Griffin, }
- Fitted at the expense of Henry Grinnell, of New York,
to Lancaster Strait and Wellington Channel.

followed in 1852 and 1853, and though none of them succeeded in the object of their search, yet they enriched the geography of the Arctic World with many interesting discoveries.

Overcoming the ice of Baffin's Bay by the aid of their powerful steam-tugs, Austin, Ommaney, and Penny reached the entrance of Lancaster Sound. Here they separated, and while the *Resolute* remained behind to examine the neighborhood of Pond's Bay, Ommaney found at Cape Riley (North Devon) the first traces of the lost expedition. He was soon joined by Ross, Austin, Penny, and the American explorers, and a minute investigation soon proved that Cape Spencer and Beechey Island, at the entrance of Wellington Channel, had been the site of Franklin's first winter-quarters, distinctly marked by the remains of a large storehouse, staves of casks, and empty pemmican-tins. Meanwhile winter approached, and little more could be done that season, so all the vessels which had entered Barrow's Strait now took up their winter-quarters at the southern extremity of Cornwallis Land; with the exception of the *Prince Albert*, which set sail for England before winter set in, and of the Americans, who, perceiving the impolicy of so many ships pressing to the westward on one parallel, turned back, but were soon shut up in the pack-ice, which for eight long months kept them prisoners. The *Rescue* and *Advance* were drifted backward and forward in Wellington Channel until in December a terrific storm drove them into Barrow's Strait, and still farther on into Lancaster Sound. Several times during this dreadful passage they were in danger from the ice opening round them and closing suddenly again, and only escaped being "nipped" by their small size and



SIR JOHN FRANKLIN.

strong build, which enabled them to rise above the opposing edges instead of being crushed between them. Even on their arrival in Baffin's Bay the ice did not release them from its hold, and it was not till June 9, 1851, that they reached the Danish settlement at Disco. After recruiting his exhausted crew, the gallant *De Haven* determined to return and prosecute the search during the remainder of the season; but the discouraging reports of the whalers induced him to change his purpose, and the ships and crews reached New York at the beginning of October, having passed through perils such as few have endured and lived to recount.

Meanwhile the English searching expeditions had not remained inactive. As soon as spring came, well-organized sledge expeditions were despatched in all directions, but they all returned with the same tale of disappointment.

As soon as Wellington Channel opened, Penny boldly entered the ice-lanes with a boat, and, after a series of adventures and difficulties, penetrated up Queen's Channel as far as Baring Island and Cape Beecher, where he was compelled to turn back.

A fine open sea stretched invitingly away to the north, but his fragile boat was ill-equipped for a voyage of discovery. Fully persuaded that Franklin must have followed this route, he failed, however, in convincing Captain Austin of the truth of his theory, and as, without that officer's co-operation, nothing could be effected, he was compelled to follow the course pointed out by the Admiralty squadron, which, after two ineffectual attempts to enter Smith's and Jones's Sounds, returned to England.

The *Prince Albert* having brought home in 1850 the

intelligence of the discoveries at Beechey Island, it was resolved to prosecute the search during the next season, and no time was lost to refit the little vessel and send her once more on her noble errand, under the command of William Kennedy (1851-52). Finding Prince Regent's Inlet obstructed by a barrier of ice, Kennedy was obliged to take a temporary refuge in Port Bowen, on the eastern shore of the inlet. As it was very undesirable, however, to winter on the opposite coast to that along which lay their line of search, Kennedy, with four of his men, crossed to Port Leopold, amid masses of ice, to ascertain whether any documents had been left at this point by previous searching parties. None having been found, they prepared to return; but to their dismay they now found the inlet so blocked with ice as to render it absolutely impossible to reach the vessel either by boat or on foot. Darkness was fast closing round them, the ice-floe on which they stood threatened every instant to be shivered in fragments by the contending ice-blocks which crashed furiously against it: unless they instantly returned to shore, any moment might prove their last. A bitter cold night (September 10, 1851), with no shelter but their boat, under which each man in turn took an hour's rest—the others, fatigued as they were, seeking safety in brisk exercise—was spent on this inhospitable shore, and on the following morning they discovered that the ship had disappeared. The drift-ice had carried her away, leaving Kennedy and his companions to brave the winter as well as they could, and to endeavor in the spring to rejoin their vessel, which must have drifted down the inlet, and was most likely by this time imprisoned by the ice. Fortunately a depot of provisions, left by James

Ross at Whaler Point, was tolerably near, and finding all in good preservation, they began to fit up a launch, which had been left at the same place as the stores, for a temporary abode. Here they sat, on October 17, round a cheerful fire, manufacturing winter garments and completely resigned to their lot, when suddenly they heard the sound of well-known voices, and Lieutenant Bellot, the second in command of the *Prince Albert*, appeared with a party of seven men. Twice before had this gallant French volunteer made unavailing attempts to reach the deserted party, who soon forgot their past misery as they accompanied their friends back to the ship. In the following spring Kennedy and Bellot explored North Somerset and Prince of Wales Land, traversing with their sledge 1100 miles of desert, but without discovering the least traces of Franklin or his comrades. Yet in spite of these frequent disappointments the searching expeditions were not given over, and as Wellington Channel and the sounds to the north of Baffin's Bay appeared to offer the best chances, the spring of 1852 witnessed the departure of Edward Belcher and Captain Inglefield * for those still unknown regions.

The voyage of the latter proved one of the most successful in the annals of Arctic navigation. Boldly pushing up Smith's Sound, which had hitherto baffled

- * 1852. *Isabel*, Captain E. Inglefield. Lady Franklin's vessel.
1852-1854. *Assistance*, Edward Belcher, to Lancaster Sound, Wellington Channel.
1852-1854. *Resolute*, Captain Kellett, Lancaster Strait, Melville and Banks's Islands.
1852-1854. *Pioneer*, Lieutenant Sherard Osborne.
1852-1854. *Intrepid*, Captain McClintock.
1852-1854. *North Star*, Captain Pullen,



ROBERT MCCLURE.

every research, Inglefield examined this noble channel as far as $78^{\circ} 30'$ N. lat., when stormy weather drove him back. He next attempted Jones's Sound, and entered it sufficiently to see it expand into a wide channel to the northward.

The squadron which sailed under the command of Belcher was charged with the double mission of prosecuting the discoveries in Wellington Channel, and of affording assistance to Collinson and McClure, who, it will be remembered, had sailed in 1850 to Behring's Straits.

At Beechey Island, where the *North Star* was stationed as depot-ship, the squadron separated, Belcher proceeding with the *Assistance* and the *Pioneer* up Wellington Channel, while Kellett, with the *Resolute* and *Intrepid*, steered to the west. Scarcely had the latter reached his winter-quarters (September 7, 1852) at Dealy Island, on the south coast of Melville Island, when parties were sent out to deposit provisions at various points of the coast, for the sledge parties in the ensuing spring.

The difficulties of transport over the broken surface of the desert when denuded of snow may be estimated from the fact, that though the distance from the north to the south coast of Melville Island is no more than 36 miles in a direct line, McClintock required no less than 19 days to reach the Hecla and Griper Gulf. Similar difficulties awaited Mehan on his way to Liddon Gulf, but he was amply rewarded by finding at Winter Harbor despatches from McClure, showing that, in April, 1851, the *Investigator* was lying in Mercy Bay, on the opposite side of Banks's Strait, and that consequently the North-west Passage, the object of so many heroic efforts, was at last discovered.

On March 9, 1853, the *Resolute* opened her spring campaign with Lieutenant Pym's sledge journey to Mercy Bay, to bring assistance to McClure, or to follow his traces in case he should no longer be there.

A month later three other sledge expeditions left the ship. The one under McClintock proceeded from the Hecla and Griper Gulf to the west, and returned after 106 days, having explored 1200 miles of coast—a sledge journey without a parallel in the history of Arctic research, though nearly equaled by the second party under Mehan, which likewise started to the west from Liddon Gulf, and traveled over 1000 miles in 93 days. The third party, under Hamilton, which proceeded to the north-east towards the rendezvous appointed by Belcher the preceding summer, was the first that returned to the ship, but before its arrival another party had found its way to the *Resolute*—pale, worn, emaciated figures, slowly creeping along over the uneven ice. A stranger might have been surprised at the thundering hurrahs which hailed the ragged troop from a distance, or at the warm and cordial greetings which welcomed them on deck, but no wonder that McClure and his heroic crew were thus received by their fellow-seamen after a three years' imprisonment in the ice of the Polar Sea.

Neither the sledge parties of the *Resolute*, nor those which Belcher had sent out in all directions from his first winter-quarters in Northumberland Sound (76° 52' N. lat.) on the west side of Grinnell Peninsula, had been able to discover the least traces of Franklin. The winter (1853-54) passed, and in April Mehan found documents from Collinson giving intelligence of his proceedings since his separation from the *Investigator*.

On returning to the *Resolute*, Mehan found all hands busy preparing to leave the ship, Belcher having given orders to abandon her, as well as the *Assistance*, *Pioneer*, and *Intrepid*, which had now been blocked up above a year in the ice, and had no chance of escaping.

Thus the summer of 1854 witnessed the return to England of the *North Star*, with all those brave crews which had spent so many unavailing efforts, and in numerous boat and sledge excursions had explored so many known and unknown coasts in search of Franklin; and thus also McClure and his comrades, abandoning the *Investigator* in Mercy Bay, returned home through Davis's Straits, after having entered the Polar Ocean at the Strait of Behring. He had, however, been preceded by Lieutenant Cresswell and Mr. Wynniat, who, on an excursion to Beechey Island in the summer of 1858, had there met with and joined the *Phoenix*, Captain Inglefield, who, accompanied by his friend Bellot, had conveyed provisions to Belcher's squadron, and was about to return to England. During this expedition Bellot, whose many excellent qualities had made him a universal favorite, was unfortunately drowned by a fall into an ice-crevice during a sledge excursion.

Years had thus passed without bringing any tidings of the *Erebus* and *Terror* since the discovery of their first winter-quarters, until at last, in the spring of 1854, Dr. Rae, of the Hudson's Bay Company, while engaged in the survey of the Boothian Isthmus, fell in with a party of Esquimaux, who informed him that in the spring of 1850 some of their countrymen on King William's Island had seen a party of white men making their way to the mainland. None of them could speak the Esqui-



DANGERS OF SLEDGE-TRAVELING.

maux language intelligibly, but by signs they gave them to understand that their ships had been crushed by ice, and that they were now going to where they expected to find deer to shoot. At a later date of the same season, but before the breaking up of the ice, the



BELLOT'S DEATH.

bodies of some thirty men were discovered on the continent a day's journey from Back's Great Fish River, and five on an island near it. Some of the bodies had been buried (probably those of the first victims of

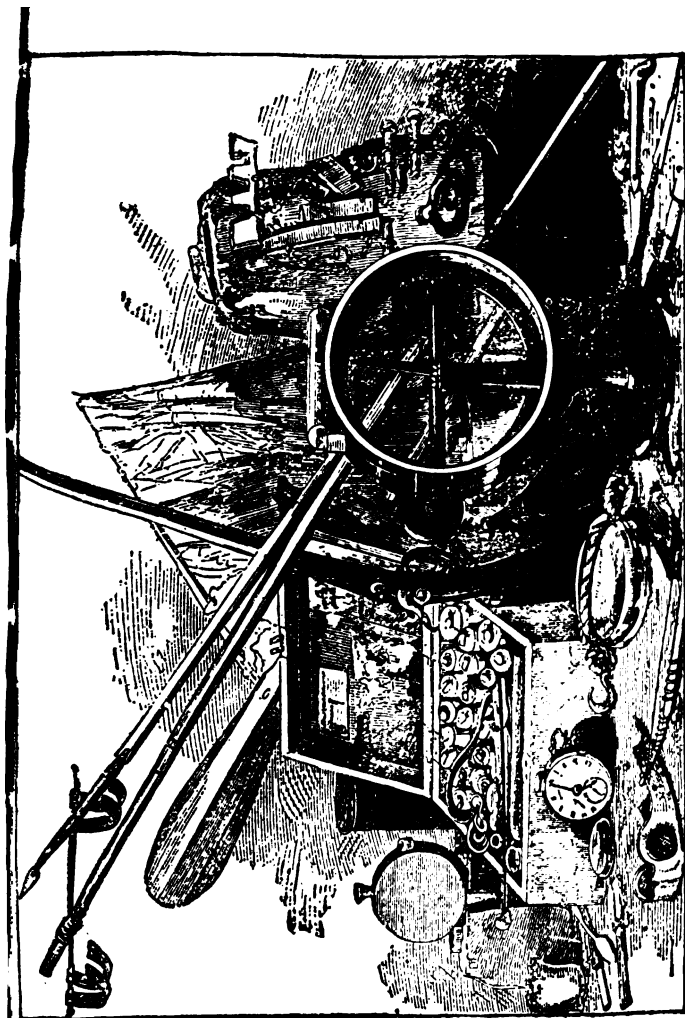


famine), some were in a tent, others under the boat which had been turned over to form a shelter, and several lay scattered about in different directions. Of those found on the island, one was supposed to have been an officer, as he had a telescope strapped over his shoulder, and his double-barreled gun lay underneath him. The mutilated condition of several of the corpses and the contents of the kettles left no doubt that the men had been driven to the last resource of cannibalism, as a means of prolonging existence. Some silver spoons and forks, a round silver plate, engraved Sir John Franklin, K. C. B., a star or order, with the motto, *Nec aspera terrent*, which Rea purchased of the Esquimaux, corroborated the truth of their narrative.

Thus it was now known how part of the unfortunate mariners had perished, but the fate of the expedition was still enveloped in mystery. What had become of the ships and of the greater part of their crews? And was Franklin one of the party seen by the Esquimaux, or had an earlier death shortened his sufferings?

To solve at least this mournful secret—for every hope that he might still be alive had long since vanished—his widow resolved to spend all her available means—since the English Government would no longer prosecute the search—and with the assistance of her friends, but mostly at her own expense, fitted out a small screw steamer, the *Fox*, which the gallant McClintock volunteered to command. Another Arctic officer, Lieutenant Hobson, likewise came forward to serve without pay.

At first it seemed as if all the elements had conspired against the success of this work of piety, for in the summer of 1857 the floating ice off Melville Bay,



RELICS OF THE FRANKLIN EXPEDITION (DISCOVERED BY MCCLINTOCK, 1858-59).

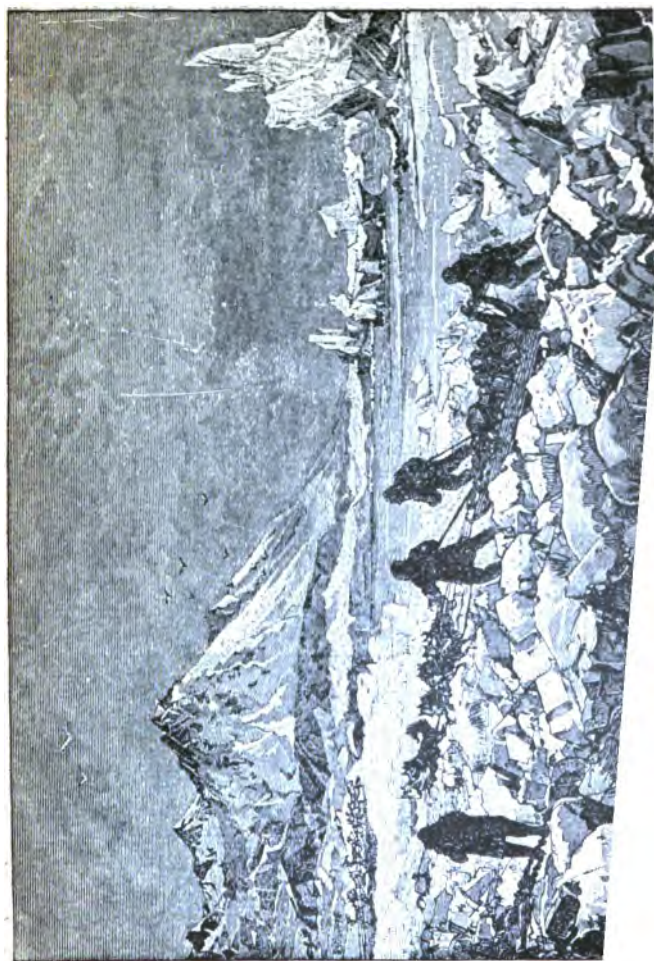
on the coast of Greenland, seized the *Fox*, and after a dreary winter, various narrow escapes, and eight months of imprisonment, carried her back nearly 1200 geographical miles, even to $63\frac{1}{2}^{\circ}$ N. lat. in the Atlantic.

At length, on April 25, 1858, the *Fox* got free, and, having availed herself of the scanty stores and provisions which the small Danish settlement of Holstenburg afforded, sailed into Barrow's Strait. Finding Franklin Channel obstructed with ice, she then turned back, and steaming up Prince Regent's Inlet, arrived at the eastern opening of Bellot's Strait. Here the passage to the west was again found blocked with ice, and after five ineffectual attempts to pass, the *Fox* at length took up her winter-quarters in Port Kennedy, on the northern side of the strait.

On his first sledge excursion in the following spring, McClintock met, at Cape Victoria, on the south-west coast of Boothia, with a party of Esquimaux, who informed him that some years back a large ship had been crushed by the ice out in the sea to the west of King William's Island, but that all the people landed safely.

Meeting with the same Esquimaux on April 20, he learned, after much anxious inquiry, that besides the ship which had been seen to sink in deep water, a second one had been forced on shore by the ice, where they supposed it still remained, but much broken. They added that it was in the fall of the year—that is, August or September—when the ships were destroyed; that all the white people went away to the Great Fish River, taking a boat or boats with them, and that in the following winter their bones were found there.

These first indications of the fate of Franklin's



expedition were soon followed by others. On May 7 McClintock heard that many of the white men dropped by the way as they went to the Great River; that some were buried, and some were not. They did not themselves witness this, but discovered their bodies during the winter following.

Visiting the shore along which the retreating crews must have marched, he came, shortly after midnight of May 25, 1858, when slowly walking along a gravel ridge near the beach, which the winds kept partially bare of snow, upon a human skeleton, partly exposed, with here and there a few fragments of clothing appearing through the snow.

"A most careful examination of the spot," says McClintock, "was of course made, the snow removed, and every scrap of clothing gathered up. A pocket-book, which being frozen hard could not be examined on the spot, afforded strong grounds for hope that some information might be subsequently obtained respecting the owner, and the march of the lost crews. The victim was a young man, slightly built, and perhaps above the common height; the dress appeared to be that of a steward. The poor man seems to have selected the bare ridge top, as affording the least tiresome walking, and to have fallen upon his face in the position in which we found him. It was a melancholy truth, as reported, that, 'They fell down and died as they walked along.'"

Meanwhile Hobson, who was exploring with another sledge party the north-western coast of King William's Land, had made the still more important discovery of a record giving a laconic account of the Franklin expedition up to the time when the ships were lost and



"AND AS THEY FELL, THEY DIED."

abandoned. It was found on May 6, in a large cairn at Point Victory. It stated briefly that in 1845 the *Erebus* and *Terror* had ascended Wellington Channel to lat. 77°, and returned by the west side of Cornwallis Island to Beechey Island, where they spent the first winter. In 1846 they proceeded to the south-west, through Peel Sound and Franklin Sound, and reached within 12 miles of the north extremity of King William's Land, when their progress was arrested by the ice. Sir John Franklin died on June 11, 1847, having completed—two months before his death—the sixty-first year of an active, eventful, and honorable life. On April 22, 1848, the ships were deserted, having been beset since September 12, 1846. The officers and crew, consisting of 105 souls, under the command of Captain Crozier, landed with the intention of starting for Back's Fish River, which, as we have seen, they were never destined to reach.

Quantities of clothing and articles of all kinds were found lying about the cairn, as if these men, aware that they were retreating for their lives, had then abandoned everything which they considered superfluous.

Thus all doubts about Sir John Franklin's fate were at length removed. He at least had died on board his ship, and been spared the miserable end of his comrades as they fell one by one in the dreary wilderness.

The two wrecks have disappeared without leaving a trace behind. A single document, some coins and pieces of plate—this is all that remains of the gallant ships which so hopefully sailed forth under one of the noblest seamen that ever served in the English Navy.

It is a curious circumstance that Franklin's ships



SIR JAMES McCLINTOCK.

perished within sight of the headlands named Cape Franklin and Cape Jane Franklin by their discoverer, James Ross, 18 years before.

John Franklin was born in 1786. He entered the Navy in 1800 as a midshipman, and served in the action off Copenhagen. He took part also in the battle of Trafalgar in 1805. Towards the close of 1814, he joined the expedition to New Orleans, where he was slightly wounded. He assisted in conducting the cutting of a canal across the entire neck of land between the Bayou Catalan and the Mississippi. For his meritorious service here he was warmly recommended for promotion. He was knighted in 1829, on his return from his second Arctic expedition.

CHAPTER V.

ELISHA KENT KANE AND ISAAC I. HAYES.

IN point of dramatic interest, none of the Arctic expeditions can rival the second and last voyage of Dr. Elisha Kent Kane, which, to avoid interrupting the narrative of the discovery of Franklin's fate by Rae and James McClintock, we have refrained from mentioning in its chronological order.

Weak in body, but great in mind, this remarkable man, who had accompanied the first Grinnell expedition in the capacity of surgeon, sailed from New York, May 30, 1853, as commander of the *Advance*, with a crew of 17 officers and men, to which two Greenlanders were subsequently added. His plan was to pass up Baffin's Bay to its most northern attainable

point, and thence pressing on towards the Pole as far as boats or sledges could reach, to examine the coast-lines for vestiges of Franklin.

Battling with the storms and icebergs, he passed, on August 7, 1853, the rocky portals of Smith's Sound,* Cape Isabella and Cape Alexander, which had been discovered the year before by Inglefield; left Cape Hatherton—the extreme point attained by that navigator—behind, and after many narrow escapes from shipwreck, secured the *Advance* in Rensselaer Bay, from which she was destined never to emerge. His diary gives us a vivid account of the first winter he spent in this haven, in lat. $78^{\circ} 38'$, almost as far to the north as the most northern extremity of Spitzbergen, and in a far more rigorous climate.



THE "CROW'S NEST."

"Sept. 10, 1853.—The birds have left. The seagulls, which abounded when we first reached here,

* Baffin had discovered Smith's Sound in 1616, but no European or American had explored it till Kane ventured there. His voyage to it was full of difficulties and perils, which might appall the most stout-hearted,

and even the young burgomasters that lingered after them, have all taken their departure for the south. The long 'night in which no man can work' is close at hand; in another month we shall lose the sun. Astronomically, he should disappear on October 24, if our horizon were free; but it is obstructed by a mountain ridge; and, making all allowances for refraction, we cannot count on seeing him after the 10th.

"*Sept. 11.*—The long staring day, which has clung to us for more than two months, to the exclusion of the stars, has begun to intermit its brightness. Stretching my neck to look uncomfortably at the indication of our extreme northernness, it was hard to realize that the polar star was not directly overhead; and it made me sigh as I measured the few degrees of distance that separated our zenith from the Pole over which he hung.

"*Oct. 28.*—The moon had reached her greatest northern declination of about $25^{\circ} 35'$. She is a glorious object; sweeping around the heavens, at the lowest part of her curve she is still 14° above the horizon. For eight days she has been making her circuit with nearly unvarying brightness.

"*Nov. 7.*—The darkness is coming on with insidious steadiness, and its advances can only be perceived by comparing one day with its fellow of some time back. We still read the thermometer at noonday without a light, and the black masses of the hills are plain for about five hours, with their glaring patches of snow; but all the rest is darkness. The stars of the sixth magnitude shine out at noonday. Except upon the island of Spitzbergen, no Christians have wintered in



ELISHA KENT KANE.

so high a latitude as this.* They were Russian sailors who had made the encounter there—men inured to hardships and cold. Our darkness has 90 days to run before we shall get back again even to the contested twilight of to-day. Altogether our winter will have been sunless for 140 days.

Nov. 9.—Wishing to get the altitude of the cliffs on the south-west cape of our bay before the darkness set in thoroughly, I started in time to reach them with my Newfoundlanders at noonday, the thermometer indicating 23° below zero. Fireside astronomers can hardly realize the difficulties in the way of observations at such low temperatures. The breath, and even the warmth of the face and body, cloud the sextant-arc and glasses with a fine hoar-frost. It is, moreover, an unusual feat to measure a base-line in the snow at 55° below freezing.

Nov. 21.—We have schemes innumerable to cheat the monotonous solitude of our winter—a fancy ball; a newspaper, 'The Ice Blink;' a fox-chase round the decks.

Dec. 15.—We have lost the last vestige of our mid-day twilight. We cannot see print, and hardly paper; the fingers cannot be counted a foot from the eyes. Noonday and midnight are alike; and, except a vague glimmer in the sky that seems to define the hill outlines of the south, we have nothing to tell us that this Arctic world of ours has a sun. In the darkness, and consequent inaction, it is almost in vain that we seek to create topics of thought, and, by a forced excitement, to ward off the encroachments of disease.

* Rensselaer Harbor is situated $1^{\circ} 46'$ higher than Belcher's winter-quarters in Northumberland Sound, $76^{\circ} 52'$.

"*Jan. 21, 1854.*—First traces of returning light, the southern horizon having for a short time a distinct orange tinge.

"*Feb. 21.*—We have had the sun for some days sil-
vering the ice between the headlands of the bay, and
to-day, toward noon, I started out to be the first of my



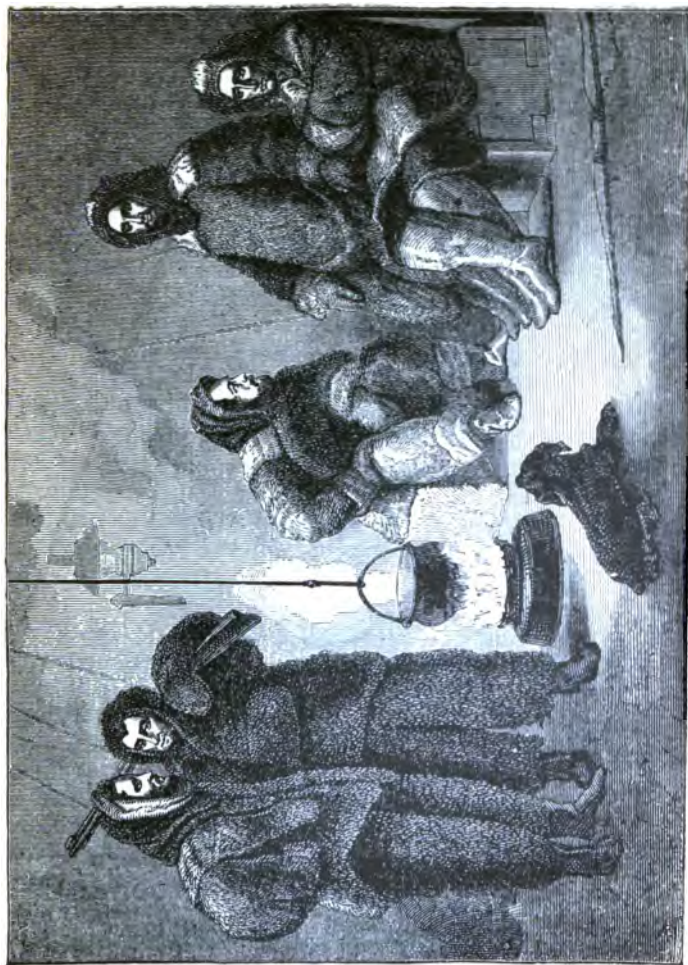
INTERIOR OF TENT.

party to welcome him back. It was the longest walk and toughest climb that I have had since our imprisonment, and scurvy and general debility have made me 'short o' wind.' But I managed to attain my object. I saw him once more, and upon a projecting crag nestled in the sunshine. It was like bathing in perfumed water."

Thus this terrible winter night drew to its end, and the time came for undertaking the sledge journeys, on which the success of the expedition mainly depended. Unfortunately, of the nine magnificent Newfoundlanders and the 35 Esquimau dogs originally possessed by Kane, only six had survived an epizootic malady which raged among them during the winter: their number was, however, increased by some new purchases from the Esquimaux who visited the ship at the beginning of April.

Thus scantily provided with the means of transport, Kane, though in a very weak condition, set out on April 25, 1854, to force his way to the north. He found the Greenland coast beyond Rensselaer Bay extremely picturesque, the cliffs rising boldly from the shore-line to a height of sometimes more than 1000 feet, and exhibiting every freak and caprice of architectural ruin. In one spot the sloping rubbish at the foot of the coast-wall led up like an artificial causeway to a gorge that was streaming at noonday with the southern sun, while everywhere else the rock stood out in the blackest shadow. Just at the edge of this bright opening rose the dreamy semblance of a castle, flanked with triple towers, completely isolated and defined. These were called the "Three-brother Turrets."

"Farther on, to the north of latitude 79° , a single cliff of greenstone rears itself from a crumbled base of sandstone, like the boldly chiseled rampart of an ancient city. At its northern extremity, at the brink of a deep ravine which has worn its way among the ruins, there stands a solitary column or minaret tower. The length of the shaft alone is 480 feet, and it rises on a pedestal, itself 280 feet high. I remember well the emotions of



my party, as it first broke upon our view. Cold and sick as I was, I brought back a sketch of it which may have interest for the reader, though it scarcely suggests the imposing dignity of this magnificent landmark."

But no rock formation, however striking or impressive, equaled in grandeur the magnificent glacier to which Kane has given the name of Humboldt. Its solid glassy wall, diminishing to a well-pointed wedge in the perspective, rises 300 feet above the water-level, with an unknown, unfathomable depth below it and its curved face 60 miles in length—from Cape Agassiz to Cape Forbes—vanishes into unknown space at not more than a single day's railroad travel from the pole.

In spite of the snow, which had so accumulated in drifts that the travelers were forced to unload their sledges and carry forward the cargo on their backs, beating a path for the dogs to follow in, Kane came in sight of the Great Glacier on May 4; but this progress was dearly earned, as it cost him the last remnant of his strength.

"I was seized with a sudden pain," says the intrepid explorer, "and fainted. My limbs became rigid, and certain obscure tetanoid symptoms of our winter enemy, the scurvy, disclosed themselves. I was strapped upon the sledge, and the march continued as usual, but my powers diminished so rapidly that I could not resist the otherwise comfortable temperature of 5° below zero. My left foot becoming frozen caused vexatious delays, and the same night it became evident that the immovability of my limbs was due to dropsical effusion. On May 5, becoming delirious and fainting every time that I was taken from the tent to the sledge, I succumbed entirely. My comrades would kindly persuade me that,

even had I continued sound, we could not have proceeded on our journey. The snows were very heavy, and increasing as we went; some of the drifts perfectly



GETTING READY TO "BAG."

impassable, and the level floes often four feet deep in yielding snow.

"The scurvy had broken out among the men, with symptoms like my own, and Morton, our strongest man, was beginning to give way. It is the reverse of

comfort to me that they shared my weakness. All that I should remember with pleasurable feeling is that to my brave companions, themselves scarcely able to travel, I owe my preservation.

"They carried me back by forced marches. I was taken into the brig on May 14, where for a week I lay fluctuating between life and death. Dr. Hayes regards my attack as one of scurvy, complicated by typhoid fever."

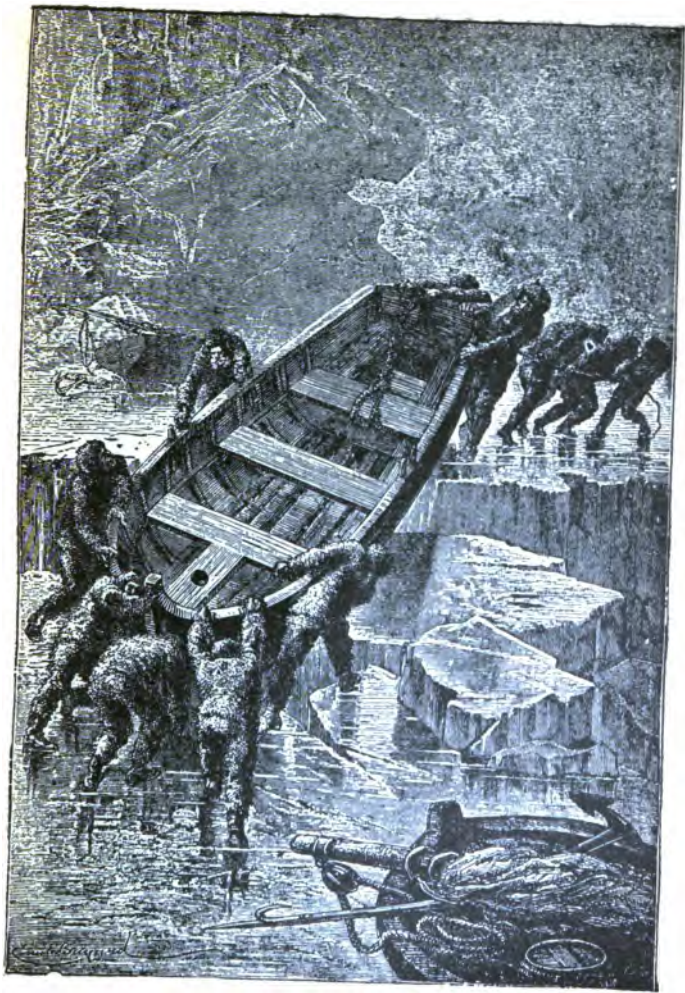
Fortunately summer was now approaching, with cheering sunbeams and genial warmth. The seals began to appear on the coast in large numbers, and there was now no want of fresh meat, the chief panacea against the scurvy. The snow-buntings returned to the ice-crested rocks, and the gulls and eider-ducks came winging their way to their northern breeding-places.

Vegetation sprang into life with marvelous rapidity, and the green sloping banks not only refreshed the eye, but yielded juicy, anti-scorbutic herbs.

Kane's health slowly but steadily improved. He was, however, obliged to give up all further sledge excursions for the season, and to leave the execution of his plans to his more able-bodied companions.

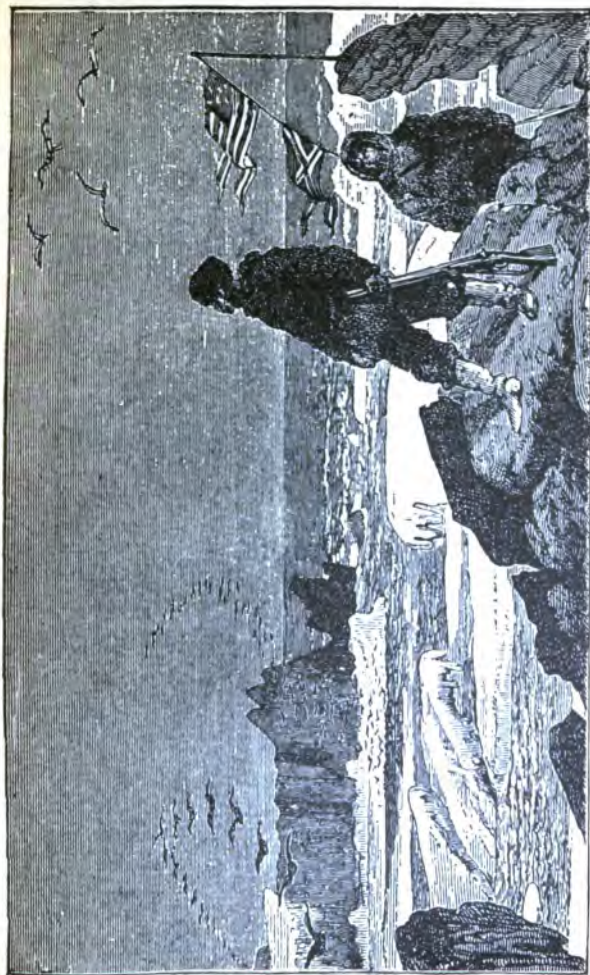
Thus Dr. Hayes, crossing the sound in a north-easterly direction, reached the opposite coast of Grinnell Land, which he surveyed as far as Cape Frazer in latitude $79^{\circ} 45'$.

This journey was rendered slow and tedious by the excessively broken and rugged character of the ice. Deep cavities filled with snow intervened between lines of hummocks frequently exceeding 30 feet in height. Over these the sledge had to be lifted by main strength,



AN ARDUOUS EMPLOYMENT.

and it required the most painful efforts of the whole party to liberate it from the snow between them. Dr. Hayes returned on June 1, and a few days later Morton left the brig, to survey the Greenland coast beyond the Great Glacier. The difficulties were great, for, beside the usual impediments of hummocks, the lateness of the season had in many places rendered the ice extremely unsafe, or even entirely destroyed the ice-ledge along the shore. Thus for the last days of his onward journey he was obliged to toil over the rocks and along the beach of a sea which, like the familiar waters of the south, dashed in waves at his feet. Morton and his Esquimau companion reached, on June 26, 1854, Cape Constitution, a bold headland, where the surf rolled furiously against high overhanging cliffs, which it was found impossible to pass. Climbing from rock to rock, in hopes of doubling the promontory, Morton stood at this termination of his journey, and from a height of 300 feet looked out upon a great waste of waters, stretching to the unknown north. Numerous birds—sea-swallows, kittiwakes, brent-geese—mixed their discordant notes with the novel music of dashing waves; and among the flowering plants growing on the rocks was found a crucifer (*Hesperis pygmaea*), the dried pods of which, still containing seed, had survived the wear and tear of winter. From Cape Constitution the coast of Washington Land trended to the east, but far to the northwest, beyond the open waters of the channel, a peak, terminating a range of mountains similar in their features to those of Spitzbergen, was seen towering to a height of from 2500 to 3000 feet. This peak, the most remote northern land at that time known upon our globe, received the name of Mount Parry.



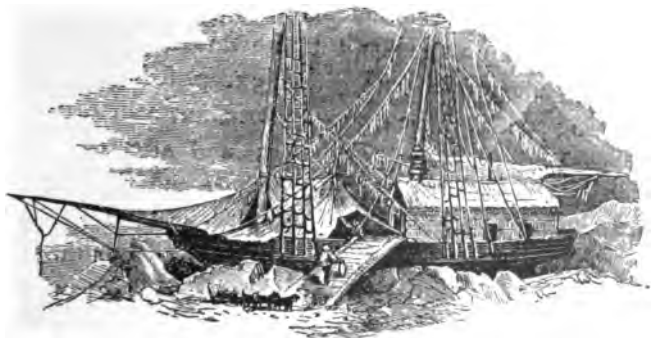
THE OPEN SEA.

Respecting this "great waste of waters," Kane, who regarded it as the open Polar Sea, thus expresses himself: "It must have been an imposing sight, as he stood at this termination of his journey, looking out upon the great waste of waters before him. Not a 'speck of ice,' to use his own words, could be seen. There from a height of 480 feet, which commanded a horizon of almost 40 miles, his eyes were gladdened with the novel music of dashing waters, and a surf, breaking in among the rocks at his feet, stayed his further progress. . . . Morton called the cape which baffled his labors after his commander, but I have given it the more enduring name of 'Cape Constitution.' There was not a man among us who did not long for the means of embarking upon its bright and lovely waters.

"An open sea near the Pole, or even an open polar basin, has been a topic for theory for a long time, and has been shadowed forth to some extent by actual or supposed discoveries. As far back as 1596 (Barentz), without referring to the earlier and more uncertain chronicles, water was seen to the eastward of the northernmost cape of Nova Zembla, and until its limited extent was defined by direct observation, it was assumed to be the sea itself. The Dutch fishermen above and around Spitzbergen pushed their adventurous cruisers through the ice into open spaces, varying in size and form with the season and the winds; and Scoresby alludes to such vacancies in the floe as pointing in argument to a freedom of movement from the north, inducing open water in the neighborhood of the Pole. Baron Wrangell, when 40 miles from the coast of Arctic Asia, saw, as he thought, a 'vast illimitable

ocean,' forgetting how narrow are the limits of human vision on a sphere. Still more recently Captain Penny proclaimed a sea in Wellington Sound, on the very spot where Belcher has since left his frozen ships; and my predecessor, Captain Inglefield, from the masthead of his little vessel, announced an 'open polar basin' but 15 miles off from the ice which arrested our progress the next year.

"All these illusory discoveries were no doubt chroni-



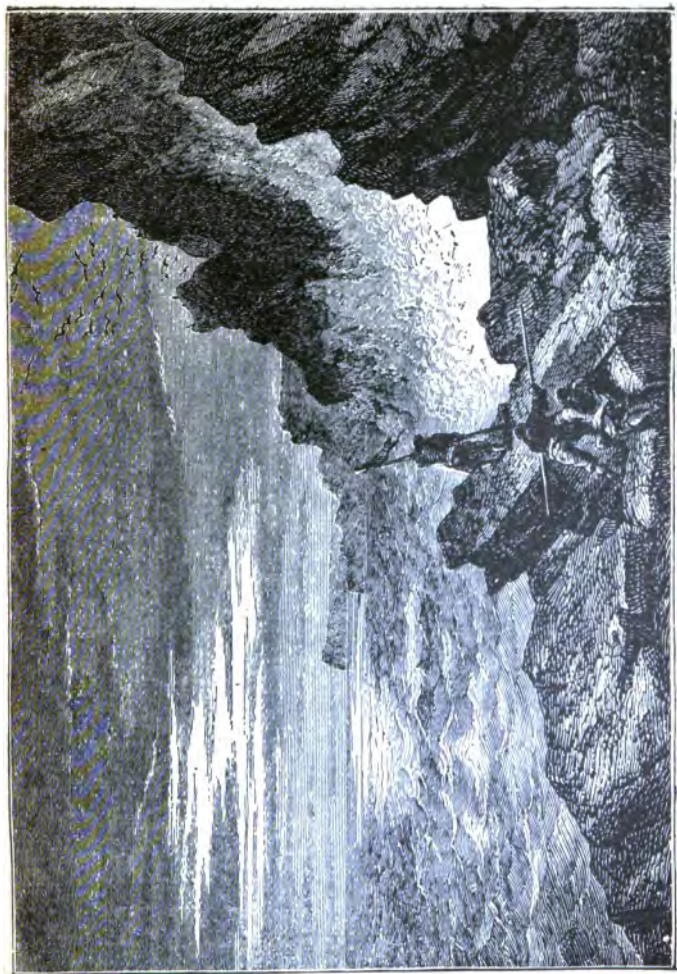
KANE'S BRIG.

cled with perfect integrity; and it may seem to others, as since I have left the field it sometimes does to myself, that my own, though on a larger scale, may one day pass within the same category. Unlike the others, however, that which I have ventured to call an open sea has been traveled for many miles along its coast, and was viewed from an elevation of 480 feet, still without a limit, moved by a heavy swell, free of ice, and dashing in surf against a rock-bound shore.

"It is impossible, in reviewing the facts which connect themselves with this discovery—the melted snow upon the rocks, the crowds of marine birds, the limited but still advancing vegetable life, the rise of the thermometer in the water—not to be struck with their bearing on the question of a milder climate near the Pole."

Meanwhile the short summer was wearing on, and, as far as the eye could reach, the ice remained inflexibly solid. It was evident that many days must elapse before the vessel could be liberated—but then most likely winter would almost have returned—a dismal prospect for men who knew by experience the long fearful night of the 79° of latitude, and who, broken in health and with very insufficient supplies of provisions and fuel, were but ill armed for a second encounter. Many of Kane's companions thought it better to abandon the vessel than to tarry longer in those frozen solitudes.

But though it was horrible to look another winter in the face, the resolution of Kane could not be shaken. On August 24, when the last hope of seeing the vessel once more afloat had vanished, he called the officers and crew together, and explained to them frankly the considerations which determined him to remain. To abandon the vessel earlier would have been unseemly, and to reach Upernavik so late in the season was next to impossible. To such of them, however, as were desirous of making the attempt, he freely gave his permission so to do, assuring them of a brother's welcome should they be driven back. He then directed the roll to be called, and each man to answer for himself. In result, eight out of the seventeen survivors of the party resolved to stand by the brig. The others left on the 28th, with every appliance which the narrow circum-



MORTON AT CAPE CONSTITUTION.

stances of the brig could furnish to speed and guard them. When they disappeared among the hummocks, the stern realities of their condition pressed themselves with double force on those whom they left behind.

The reduced numbers of the party, the helplessness of many, the waning efficiency of all, the impending winter, with its cold, dark nights, the penury of their resources, the dreary sense of increased isolation—all combined to depress them. But their energetic leader, leaving them no time for these gloomy thoughts, set them actively to work to make the best possible preparations they could for the long, cold night to come.

He had carefully studied the Esquimaux, and determined that their form of habitations and their mode of diet, without their unthrift and filth, were the safest and best that could be adopted. The deck was well padded with moss and turf, so as to form a nearly cold-proof covering, and, down below, a space some 18 feet square—the apartment of all uses—was inclosed and packed from floor to ceiling with inner walls of the same non-conducting material. The floor itself, after having been carefully caulked, was covered with Manilla oakum a couple of inches deep and a canvas carpet. The entrance was from the hold, by a low moss-lined tunnel, with as many doors and curtains to close it up as ingenuity could devise. Large banks of snow were also thrown up along the brig's sides to keep off the cold wind.

All these labors in the open air wonderfully improved the health of the exiles, and their strength increased from day to day. A friendly intercourse was opened with the Esquimaux of the winter settlements of Etah and Anoatok, distant some thirty and seventy miles

from the ship, who, for presents of needles, pins, and knives, engaged to furnish walrus and fresh seal meat, and to show the white men where to find the game. Common hunting-parties were organized, visits of courtesy and necessity paid, and even some personal attachments established deserving of the name. As long as they remained prisoners of the ice, they were indebted to their savage friends for invaluable counsel in relation to their hunting expeditions, and in the joint hunt they shared alike.

The Esquimaux gave them supplies of meat at critical periods, and they were able to do as much for them. In one word, without the natives, Kane and his companions would most likely have succumbed to the winter, and the Esquimaux on their part learned to look on the strangers as benefactors, and mourned their departure bitterly.

On December 12, the party which had abandoned the ship returned, having been unable to penetrate to the south, and was received, as had been promised, with a brotherly welcome. They had suffered bitterly from the cold, want of food, and the fatigues of their march among the hummocks.

"The thermometer," says Kane, "was at -50° ; they were covered with rime and snow, and were fainting with hunger. It was necessary to use caution in taking them below; for, after an exposure of such fearful intensity and duration as they had gone through, the warmth of the cabin would have prostrated them completely. They had journeyed 350 miles; and their last run from the bay near Etah, some 70 miles in a right line, was through the hummocks at this appalling temperature. One by one they all came in and were

housed. Poor fellows! as they threw open their Esquimau garments by the stove, how they relished the scanty luxuries which we had to offer them! The coffee, and the meat-biscuit soup, and the molasses, and the wheat bread, even the salt pork, which our scurvy forbade the rest of us to touch—how they relished it all! For more than two months they had lived on frozen seal and walrus meat."

Thus Kane, by his determination not to abandon the ship, proved the saviour of all his comrades; for what would have become of them had he been less firm in his resolution, or if his courage had failed him during the trials of that dreadful winter?

"February closes," says the heroic explorer; "thank God for the lapse of its 28 days! Should the 31 of the coming March not drag us farther downward, we may hope for a successful close to this dreary drama. By April 10, we should have seals; and when they come, if we remain to welcome them, we can call ourselves saved. But a fair review of our prospects tells me that I must look the lion in the face. The scurvy is steadily gaining on us. I do my best to sustain the more desperate cases, but as fast as I partially build up one, another is stricken down. Of the six workers of our party, as I counted them a month ago, two are unable to do out-door work, and the remaining four divide the duty of the ship among them. We chop five large sacks of ice, cut six fathoms of eight-inch hawser into junks of a foot each, serve out the meat when we have it, hack at the molasses, and hew out with crowbar and axe the pork and dried apples; pass up the foul slop and cleansings of our dormitory, and, in a word, cook, *scullionize*, and attend the sick.

Added to this, for five nights running I have kept watch from 8 P. M. to 4 A. M., catching such naps as I could in the day without changing my clothes, but carefully waking every hour to note thermometers."

With March came an increase of sufferings. Every man on board was tainted with scurvy, and there were seldom more than three who could assist in caring for the rest. The greater number were in their bunks, absolutely unable to stir. Had Kane's health given way, the whole party, deprived of its leading spirit, must inevitably have perished.

To abandon the ship was now an absolute necessity, for a third winter in Rensselaer Bay would have been certain death to all; but before the boats could be transported to the open water, many preparations had to be made, and most of the party were still too weak to move. The interval was employed by Kane in an excursion with his faithful Esquimaux to the Great Glacier.

At length, on May 20, 1855, the entire ship's company bade farewell to the *Advance*, and set out slowly on their homeward journey. It was in the soft, subdued light of a Sunday evening, June 17, that after hauling their boats with much hard labor through the hummocks, they stood beside the open sea-way. But 56 days had still to pass before they could reach the port of Upernavik. Neither storms nor drift-ice rendered this long boat-journey dangerous, but they had to contend with famine, when they at length reached the open bay, and found themselves in the full line of the great ice-drift to the Atlantic, in boats so unseaworthy as to require constant bailing to keep them afloat. Their strength had decreased to an

alarming degree; they breathed heavily; their feet were so swollen that they were obliged to cut open their canvas boots; they were utterly unable to sleep, and the rowing and bailing became hourly more difficult.

It was at this crisis of their fortunes that they saw a large seal floating—as is the custom of these animals—on a small patch of ice, and seemingly asleep. “Trembling with anxiety,” says Kane, “we prepared to crawl down upon him. Petersen, with a large English rifle, was stationed in the bow, and stockings were drawn over the oars as mufflers. As we neared the animal, our excitement became so intense that the men could hardly keep stroke. He was not asleep, for he reared his head when we were almost within rifle-shot; and to this day I can remember the hard, careworn, almost despairing expression of the men’s thin faces as they saw him move; their lives depended on his capture. I depressed my hand nervously, as a signal to fire. McGary hung upon his oar, and the boat slowly, but noiselessly surging ahead, seemed to me within certain range. Looking at Petersen, I saw that the poor fellow was paralyzed by his anxiety, trying vainly to obtain a rest for his gun against the cut-water of the boat. The seal rose on his fore flippers, gazed at us for a moment with frightened curiosity, and coiled himself for a plunge. At that instant, simultaneously with the crack of our rifle, he relaxed his long length on the ice, and, at the very brink of the water, his head fell helplessly to one side. I would have ordered another shot, but no discipline could have controlled the men. With a wild yell, each vociferating according to his own impulse, they urged their boats upon the floe.



A crowd of hands seized the seal and bore him up to safer ice. The men seemed half crazy. I had not realized how much we were reduced by absolute famine. They ran over the floe, crying and laughing, and brandishing their knives. It was not five minutes before every man was sucking his bloody fingers, or mouthing long strips of raw blubber. Not an ounce of this seal was lost."

Within a day or two another seal was shot, and from that time forward they had a full supply of food.

When Kane, after an absence of 30 months, returned on October 11, 1855, to New York, he was enthusiastically received. Well-deserved honors of all sorts awaited him on both sides of the Atlantic; but his health, originally weak, was completely broken by the trials of his journey, and on February 16, 1857, he died at the Havana, only 37 years old. In him was lost one of our noblest sons, a true hero whose name will ever shine among the most famous navigators of all times and of all nations.

In 1860, Dr. Isaac I. Hayes, who had accompanied Kane on his journey, once more set out for the purpose of completing the survey of Kennedy's Channel, and, if possible of reaching that open Polar Sea in which so many believed, and which, in his case, was a positive faith, strengthened by the discovery which he knew had been made by Morton, on Kane's expedition. After several narrow escapes from ice-fields and icebergs, his schooner, the *United States*, was at length compelled to take up her winter-quarters at Port Foulke, on the Greenland coast, about 20 miles in latitude to the south of Rensselaer Harbor. Thanks to an abundant supply of fresh meat (the neighborhood

abounded with reindeer), and no doubt to the fund of good-humor which prevailed in the ship's company, they passed the winter without suffering from the scurvy; but most of the dogs on which Hayes relied for his sledge expeditions in the ensuing spring were destroyed by the same epidemic which had been so fatal to Kane's teams. Fortunately some fresh dogs could be purchased and borrowed of the friendly Esquimaux, and thus, early in April, 1861, Isaac I. Hayes left the schooner to plunge into the icy wilderness. Having previously ascertained that



ISAAC I. HAYES.

an advance along the Greenland shore was impossible, he resolved to cross the sound, and to try his fortunes along the coast of Grinnell Land. Of the difficulties which he had to encounter his own words will give the best idea.

"By winding to the right and left, and by occasion-

ally retracing our steps when we had selected an impracticable route, we managed to get over the first few miles without much embarrassment, but farther on the tract was rough past description. I can compare it to nothing but a promiscuous accumulation of rocks closely packed together and piled up over a vast plain in great heaps and endless ridges, leaving scarcely a foot of level surface. The interstices between these closely accumulated ice-masses are filled up, to some extent, with drifted snow. The reader will readily imagine the rest. He will see the sledges winding through the tangled wilderness of broken ice-tables, the men and dogs pulling and pushing up their respective loads. He will see them clambering over the very summit of lofty ridges, through which there is no opening, and again descending on the other side, the sledge often plunging over a precipice, sometimes capsizing and frequently breaking. Again he will see the party baffled in their attempt to cross or find a pass, breaking a track with shovel and hand-spike, or again, unable even with these appliances to accomplish their end, they retreat to seek a better track; and they may be lucky enough to find a sort of gap or gateway, upon the winding and uneven surface of which they will make a mile or so with comparative ease. The snow-drifts are sometimes a help, and sometimes a hindrance. Their surface is uniformly hard, but not always firm to the foot. The crust frequently gives way, and in a most tiresome and provoking manner. It will not quite bear the weight, and the foot sinks at the very moment when the other is lifted. But, worse than this, the chasms between the hummocks are frequently bridged over with snow in such a manner as to leave a

considerable space at the bottom quite unfilled; and at the very moment when all looks promising, down sinks one man to his middle, another to the neck, another is buried out of sight; the sledge gives way, and to extricate the whole from this unhappy predicament is probably the labor of hours. It would be difficult to imagine any kind of labor more disheartening, or which would sooner sap the energies of both men and animals. The strength gave way gradually; and when, as often happened after a long and hard day's work, we could look back from our eminence and almost fire a rifle-ball into our last snow-hut, it was truly discouraging."

No wonder that after thus toiling on for 25 days they had not yet reached half-way across the sound, and that they were all broken down. But their bold leader was fully determined not to abandon his enterprise while still the faintest hope of success remained, and, sending the main party back to the schooner, he continued to plunge into the hummocks with three picked companions—Jensen, McDonald, Knorr—and 14 dogs. After fourteen days of almost superhuman exertion the sound was at length crossed, and now began a scarcely less harassing journey along the coast. On the fifth day Jensen, the strongest man of the party, completely broke down, and leaving him to the charge of McDonald, Dr. Hayes now pushed on with Knorr alone, until, on May 18, he reached the border of a deep bay, where farther progress to the north was stopped by rotten ice and cracks. Right before him, on the opposite side of the frith, rose Mount Parry, the lofty peak first seen by Morton in 1854 from the shores of Washington Land; and farther on a noble headland, Cape Union—the most northern known land upon the globe—stood in faint out-

line against the dark sky of the open sea. Thus Hayes divides the honor of extreme northern travel with Parry.

In his journal he states: "All the evidences show that I stood upon the shores of the Polar Basin, and that the broad ocean lay at my feet; that the land upon which I stood, culminating in the distant cape before me, was but a point of land projecting far into it, like the Ceverro Noss of the opposite side of Siberia, and that the little margin of ice which lined the shore was being steadily worn away, and within a month the whole sea would be as free from ice as I had seen the north water of Baffin's Bay, interrupted only by a moving pack, drifting to and fro, at the will of the winds and currents."

On July 12, the *United States* was released from her icy trammels, and Hayes once more attempted to reach the opposite coast and continue his discoveries in Grinnell Land, but the schooner was in too crippled a state to force her way through the pack-ice which lay in her course, and compelled her commander to return to Boston.

On his return home the Civil War was at its climax. He immediately wrote a letter to the President, asking for employment in the public service, affording another proof that he was made of stern material. He was appointed a medical officer, and served through the "unpleasantness." He visited Greenland in 1869; and received gold medals from the Geographical Societies of Paris and London. In 1872 his "Land of Desolation" was published.

Thus ended this remarkable voyage. Fully convinced by his own experience that men may subsist in

Smith's Sound independent of support from home, he proposed to establish a self-sustaining colony at Port Foulke, which may be made the basis of an extended exploration. Without any second party in the field to co-operate with him, and under the most adverse circumstances, he, by dint of indomitable perseverance, pushed his discoveries 100 miles farther to the north and west than his predecessors; and it is surely not oversanguine to expect that a party better provided with the means of travel may be able to traverse the 480 miles at least which intervene between Mount Parry and the Pole. The open sea, which both Morton and himself found beyond Kennedy Channel, gives fair promise of success to a strong vessel that may reach it after having forced the ice-blocked passage of Smith's Sound, or, should this be impracticable, to a boat transported across the sound and then launched upon its waters.

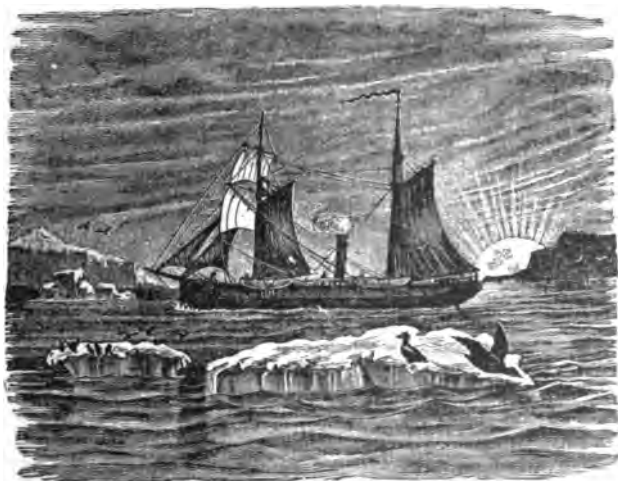
Captain Sherard Osborne, likewise a warm partisan of this route, endeavored to interest the British Government in its favor; but in the opinion of scientific authorities an easier passage seems open to the navigator who may attempt to reach the Pole by way of Spitzbergen. To the east of this archipelago the Gulf Stream rolls its volume of comparatively warm water far on to the north-east, and possibly sweeps round the Pole itself. It was to the north of Spitzbergen that Parry reached the latitude of $82^{\circ} 45'$; and in 1837 the *Truelove*, of Hull (so says the *London Athenæum*), sailed through a perfectly open sea in $82^{\circ} 30' \text{ N.}$, 15° E. , and, had she continued her course, might possibly have reached the Pole as easily as the high latitude which she had already attained.

CHAPTER VI.

HALL'S VOYAGES: THE POLARIS EXPEDITION.

CHARLES FRANCIS HALL was born in 1821, at Rochester, New Hampshire. In early life he was a blacksmith, but removed to Cincinnati, where he eventually became a journalist. He became deeply interested in Arctic travel, and in the fate of Franklin. In 1860, he made an attempt to find some traces of the Franklin expedition, but meeting with an accident, he returned, after voyaging for two years and three months. In 1864 he sailed again, and reached Hecla Strait. He carried home about 150 Franklin relics, and ascertained that Franklin had actually discovered the North-west Passage, and established the melancholy truth that most of his men died of starvation in King William's Land, where their bones lay bleaching in the snowy waste. Hall spent five years amongst the Esquimaux cultivating their good will, and by living among them acquired their confidence. He ascertained that Captain Crozier, of the *Terror* (and he believed a companion), were living amongst the Esquimaux in 1864. Other reasonings leading him to believe that some of Franklin's party still survived were substantially these: That no Arctic explorer had ever understood better the necessities of a good supply of fresh provisions for his men than did Sir John Franklin, and that he made provision for such necessities. In proof of this, Hall had found in the official papers that a full complement of fresh provisions, preserved meats, soups and vegetables, and ten live oxen were on board the *Erebus* and the *Terror*. Further, that Franklin had told Captain Martin, of the whaler

Enterprise, when off the coast of Greenland, July 22, 1845, that he had provisions for five years, and, if necessary, could make them spin out seven; and he would lose no opportunity of killing game, having already organized shooting parties. There was every reason to believe, too, that animal life was found in abundance by



THE POLARIS.

his men on the shores of Wellington Channel, especially in the neighborhood of Baillie Hamilton Island, and that Franklin had sent hunting parties to great distances with sledges; for the tracks of these sledges were seen six years after by Kane, De Haven, and Ommaney and Osborne. Hall could say with truth that his expectations of rendering relief were based on years of

careful study and examination of what had been written on this subject; and his appeal was plain and strong, "Why should not attempts be renewed again and again until all the facts are known?"

In September, 1869, Hall returned home, having discovered the site of Frobisher's settlement, made nearly 300 years before; but it was not until 1872 that he was able to start in the *Polaris* to find the North Pole. On June 29, he sailed from New York. Doctor Bessel accompanied the ship as naturalist, and one member of Kane's expedition also went. Captain Tyson, who figures in the narrative, joined the *Polaris* at Godhaven, and Hans, the hunter, at Upernavik.

On August 21, the *Polaris* continued her voyage, and followed Kane's route. Hall reached the spot where the *Advance* had been quitted, and pushing on steadily, reached the channel which had been thought was the "open Polar Sea." He proceeded up to latitude $82^{\circ} 16'$ N.; but here the *Polaris* was beset in the ice at last; hitherto all had been plain sailing. They reached winter-quarters in September, and named the place "Thank God" Bay, latitude $81^{\circ} 31'$ N., longitude $61^{\circ} 44'$ W.

The winter was fatal to Hall. After his return from a few days' sledging journey, he was suddenly taken ill. In this exploration, which he undertook with the Esquimaux and his first mate (Mr. Chester), he reached a place he named Newman's Bay, in latitude 82° N. When the illness first attacked him it was not deemed serious; but he became partially paralysed, and on November 8, 1871, he expired, leaving Buddington in command.

"Last evening," says Tyson, "the Captain himself thought he was better, and would soon be around again,

But it seems he took worse in the night. Captain Buddington came and told me he thought Captain Hall



CHARLES FRANCIS HALL.

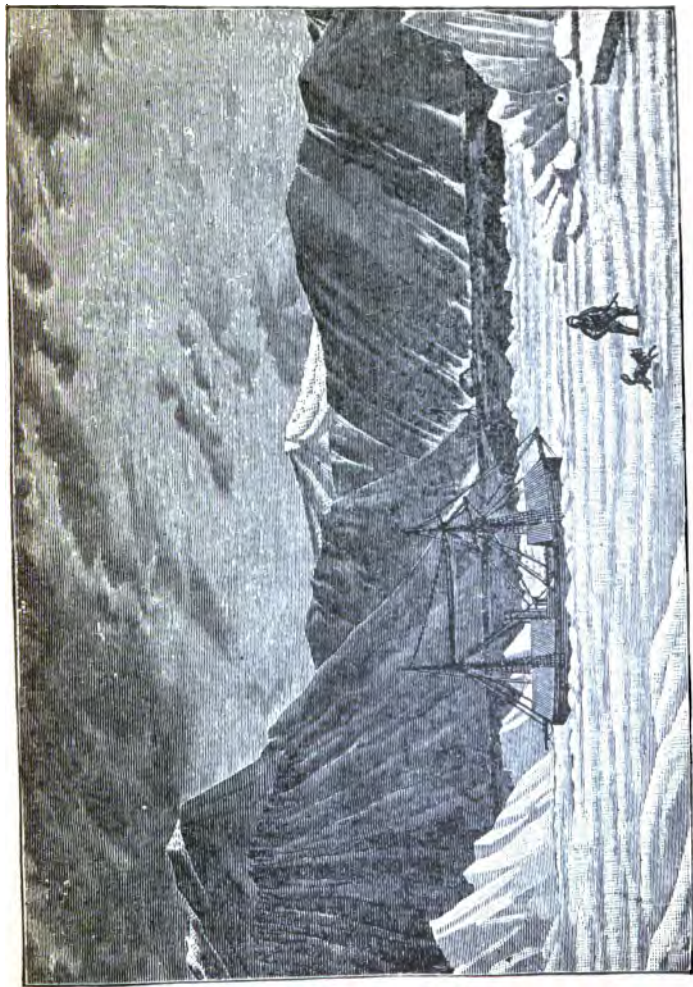
was dying. I got up immediately, and went to the cabin and looked at him. He was quite unconscious—

knew nothing. He lay on his face, and was breathing very heavily; his face was hid in the pillow. It was about half-past three o'clock in the morning that he died. Assisted in preparing the grave, which is nearly half a mile from the ship, inland; but the ground was so frozen that it was necessarily very shallow—even with picks it was scarcely possible to break it up."

In Captain Tyson's diary we find another entry under the date of November 11, which closes this strange, eventful history:

"At half-past eleven this morning we placed all that was mortal of our late commander in the frozen ground. Even at that hour of the day it was almost dark, so that I had to hold a lantern for Mr. Bryan to read the prayers. I believe all the ship's company were present, unless perhaps the steward and cook. It was a gloomy day, and well-befitting the event. The place also is rugged and desolate in the extreme. Away off, as far as the dim light enables us to see, we are bound in by huge masses of slate rock, which stand like a barricade, guarding the barren land of the interior; between these rugged hills lies the snow-covered plain; behind us the frozen waters of Polaris Bay, the shore strewn with great ice-blocks. The little hut which they call an observatory bears aloft, upon a tall flag-staff, the only cheering object in sight; and that is sad enough to-day, for the Stars and Stripes droop at half-mast.

"As we went to the grave this morning, the coffin hauled on a sledge, over which was spread, instead of a pall, the American flag, we walked in procession. I walked on with my lantern, a little in advance; then came the captain and officers, the engineer, Dr. Bessel and Meyers; and then the crew hauling the body by a



THE POLARIS IN THANK-GOD HARBOR, SEPTEMBER, 1871

rope attached to the sledge, one of the men on the right holding another lantern. Nearly all are dressed in skins; and were their eyes to see us, we should look like anything but a funeral cortège; the Esquimaux following the crew. There is a weird sort of light in the air, partly boreal or electric, through which the stars shone brightly at 11 A. M., while (we were) on our way to the grave."

Thus ended Hall's ambitious project of conquering the secret of the North Pole; and thus was quenched the enthusiasm of a singularly ardent nature.

During the remainder of the winter, surveys were made; but Buddington did not continue the discipline of Hall. In May, Tyson, Meyers, and the two Esquimaux started on a sledging expedition, and got some musk oxen. Through these boat-expeditions, during the summer, discipline was greatly relaxed, and consequently the original plan of the voyage could not be carried out. The *Polaris* on the ice drifted, as other vessels have drifted, and came down Smith's Sound to Kane's former winter-quarters.

A panic occurred in October, which nearly proved fatal to some of the members of the expedition. The ice "nipped" the *Polaris*, and it appears, from all accounts, that the ice-master (Buddington) completely lost his presence of mind, and ordered a general heaving overboard of stores and everything on deck. The order was obeyed, with results as might have been anticipated. The ice was broken up by the lifting and settling of the ship. The stores were scattered broadcast on the floe, and Captain Tyson, with a few of the most sensible men, left the vessel to arrange the stores, with the



CAPTAIN HALL'S FUNERAL.

Esquimaux and their wives and children as assistants in the work.

They were all very busy sorting the supplies when a terrible rending and cracking was heard. Explosion succeeded explosion—the ice opened in many places—the *Polaris* was freed; and in a few moments, before the people on the ice could return, or indeed realize the situation, she had plunged into the darkness and disappeared!

This was a terrible catastrophe. There were nineteen men, women, and children actually adrift upon a mass of ice, with a very limited supply of provisions, and the only means of gaining *terra firma* two small boats. These were got ready, but the loose ice rendered their use impossible. The *Polaris* came in sight, but paid no attention to signals. So the voyagers remained drifting on the ice-floe, about four miles in circumference, but by no means assured from disruption, which might occur at any moment.

The ice continued to drift, and now and then pieces broke off. On the 16th the dreaded event occurred—the floe parted—the castaway party on one side, and the house, etc., on the other. But by means of the boats the stores were recovered, and then a fresh floe was occupied, whereon snow-huts were erected, Esquimau fashion.

Time passed. October went and November came; food was scarce, and the exploring party were "allowanced." But two seals, less cautious than their companions, were at length captured—nearly all the dogs had already been eaten, and fresh food was absolutely necessary. The seals caught were scientifically killed, the blood was drunk, and "the eyes," says Captain

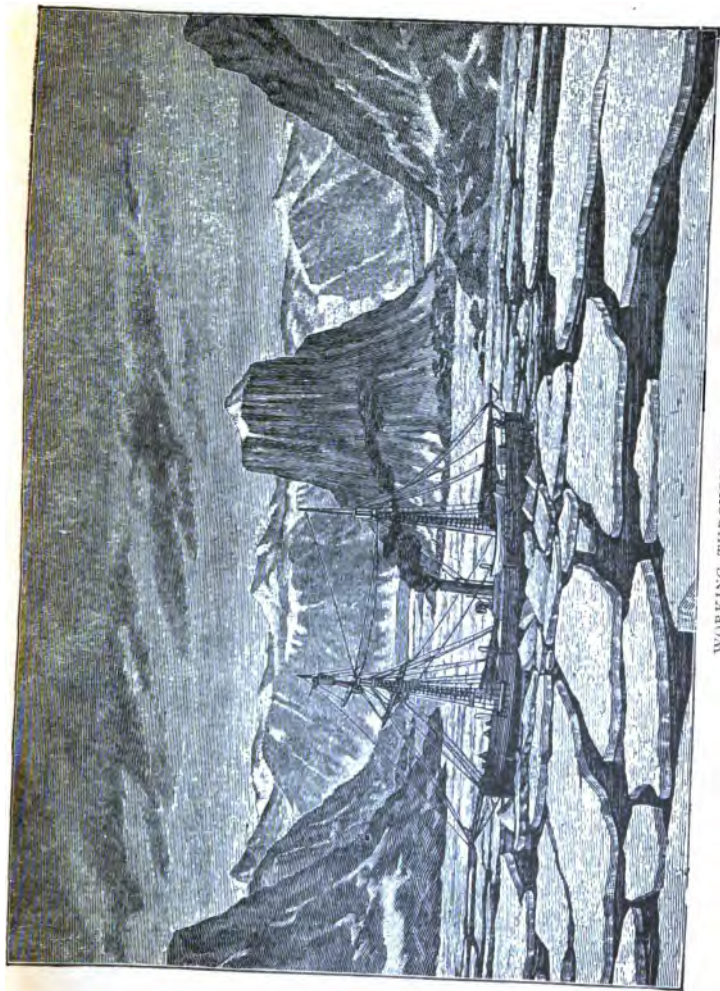


Tyson, "given to the youngest child." (The animal, being cut up, is divided into portions which are distributed by lot to the various candidates for the delicate morsels, of which the brain is considered the daintiest.)

We need scarcely detail the daily round and common tasks of the drifting party on the ice. On January 19 Davis's Strait was reached, and a ray of sunlight cheered them; so the progress southward had been considerable. The German seamen did not behave well and caused considerable anxiety, but there was no long disturbance.

At the beginning of March the ice reached Cumberland Gulf, and on the 11th it broke up with direful noises, leaving the whole party on a small piece, which being fortunately very thick continued its journey southward very gently. Seals were now captured in abundance. One of the Esquimaux also shot a bear. Then the floe was quitted, and the pack-ice reached. After that things became worse. A gale arose and blew away their tent and bedding, and unless they had all clung to the boat it would have been lost also. They saved it, but remained without shelter, half frozen and in danger of starvation. At the end of April three steamers successively appeared, but although the castaways did all they could to attract attention, they were not perceived until on the 30th another "steam sealer," the *Tigress*, of Newfoundland, appeared and rescued them from their perilous position. They were all landed at St. John's on May 12.

Meanwhile, as the *Polaris* had not appeared, the *Tigress* was commissioned by Captain Greer, U. S. Navy, to seek her. She steamed up to Littleton Island, where an encampment of Esquimaux was discovered. The men were wearing clothing obtained from the *Polaris*,



WORKING THROUGH THE ICE.

but after search and inquiry no after trace of the crew could be obtained, so Captain Greer returned to St. John's. They reached New York and heard that Buddington and his crew had been picked up by a whaler some months before. Thus every member of the ill-fated *Polaris* expedition arrived safely at their homes, except its gallant and enthusiastic leader, whose ambitious hopes had been so sadly and fatally extinguished.

The ill-fated *Polaris* had been abandoned in latitude $78^{\circ} 23' N.$, longitude $73^{\circ} 21' W.$ She had been rendered almost useless by the ice, and the Esquimaux were presented with the hull; but she foundered. The crew encamped during the winter, and in the summer they sailed down to Cape York, where they met the ice. But in Melville Bay a steamer was seen embedded in the ice. This vessel was the *Ravenscraig*, of Dundee, whose Captain, Allen, received them very kindly. He subsequently put some of them on a vessel bound for Dundee, whither they then proceeded, and came home from Liverpool to New York; the others came back a few weeks later. Thus ended the unfortunate *Polaris* expedition, which, but for the untimely death of Captain Hall, might have accomplished its object—the discovery of the North Pole.

George Nares, commanding the English Arctic Expedition of 1875, recorded in his official report his testimonials to Hall's fidelity as an Arctic explorer:—

“The coast-line was observed to be continuous for about 30 miles, forming a bay, bounded toward the west by the U. S. range of mountains, with Mounts Mary and Julia and Cape Joseph Henry, *agreeing so well with Hall's description* that it was impossible to mistake



SIGHTING THE RAVENS CRAIG.

their identity. Their bearings also, although differing upwards of 30° from those of the published chart, agreed *precisely with his published report.*"

On May 13, 1876, in the presence of 24 officers and men, Captain Stephenson, of the English Expedition, hoisted the American flag over the grave of Captain Hall, and at the foot erected a brass tablet, prepared in England, bearing the following inscription:

SACRED TO THE MEMORY OF
CAPTAIN C. F. HALL,
Of the U. S. S. "Polaris:"

Who Sacrificed his Life in the advancement of Science, November 8, 1871. This Tablet has been erected by the British Polar Expedition of 1875, who, following in his footsteps, have profited by his Experience.



He also reported to Captain Nares that the grave was found in an excellent state of preservation. The willow planted by Tyson was still alive. The inscription put upon it in July, 1871, by Hall's comrades, still read:

TO THE MEMORY OF

CHARLES FRANCIS HALL,

Late Commander U. S. Steamer *Polaris*, N. Pole Expedition.

Died Nov. 8, 1871.—Aged 50 years.

"I am the Resurrection and the Life: he that believeth on Me though he were dead yet shall he live."

CHAPTER VII.

NARES'S VOYAGE WITH THE "ALERT" AND "DISCOVERY."

IN 1875 the British Government commissioned the *Alert* and the *Discovery*, under the command respectively of Captains Nares and Stephenson, to explore the Arctic regions of the Pole. This expedition was fitted out in the most complete manner, and had the advantage of the advice and assistance of the most experienced Arctic travelers. Commander Markham, who was attached to the *Alert*, had crossed the Arctic Circle before, as had Captain Nares, and all that could be done was done to make the voyage a success.

George S. Nares had already seen considerable Arctic and sea service. His scientific voyage in the *Challenger*, too, had given him an unlimited fund of experience, in addition to his previous geographical attainments. Stephenson also had proved his mettle in many parts of the world, and under these commanders were many trustworthy and experienced officers. The expedition

quitted Portsmouth on May 29, 1875, and made their way across the Atlantic. Here they met with most violent storms, which tried both ships and ships' companies, as well as the *Valorous*, store-ship, which parted company in the ocean. On June 27 the first ice was seen, and the *Valorous* was picked up again, all well.

Skirting the Greenland coast amid the ice, the vessels encountered heavy weather, and at length anchored in Godhaven Harbor, in the Isle of Disco. Here supplies and sledge dogs were embarked, and on July 15, the *Alert* towed the *Discovery* out of harbor, and proceeded northwards. They reached Upernavik and left it. Soon afterwards the *Alert* grounded, but cleared at high water. Cape York was gained in 70 hours, an extremely rapid passage. The *Alert* passed on by the Crimson Cliffs and Cape Digges, and reached the Cary Islands on July 27. Depots were formed here and records placed with letters, as also on Sutherland and Littleton Islands. The advance into Smith's Sound was by no means easy, and several times the ships had to return to the latitude of Kane's winter-quarters.

About this time the *Alert* was nearly crushed by an iceberg, but got clear, and the crew made the mountain tow the vessel by grappling it. By very slow degrees, pushing and driving through the "pack," the vessels at last reached Cape Constitution, to which Kane had penetrated, but which he did not pass. Going still northward, the ships cleared Kennedy Channel and reached Hall's Basin, in the north-east side of which were the winter-quarters of the unfortunate *Polaris*. Robeson Channel had now to be cleared.

All this time the officers and men who could be spared from duty were not idle. Parties went hunting

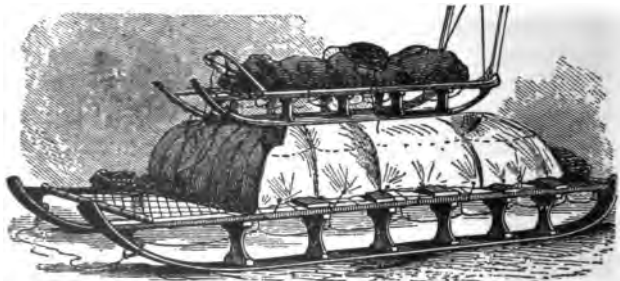
and sketching. Many scientific observations were made by dredging. Photographs were taken also.



CAPTAIN GEORGE S. NARES.

At this stage of the journey excellent winter-quarters were found for the *Discovery*. The retreat of the ships

had been secured. Orders were for the *Discovery* to remain in or about the 82d parallel. Such a situation was now found. On August 26, the *Alert* proceeded alone into Robeson Channel, but got into difficulties with the ice, which bore down on the ship in tremendous masses. But fortunately she found shelter, and escaped destruction. Any further progress appeared impossible, so preparations were made for forming the winter-quarters near at hand. As September had come, the sledges were got ready, and Markham set out with



SLEDGE.

stores to establish a depot for the spring exploring parties farther north. The party returned in three weeks frost-bitten and exhausted, but they had accomplished their mission. Lieutenant Aldrich had also come back, but reported nothing but ice.

Attempts were made to communicate with the *Discovery*, but the state of the ice and snow prevented any such adventure, though Stephenson was only 60 miles distant. Winter now set in, and the *Alert* was banked in snow. The cold was intense—the greatest ever experienced (-73°).



MARKHAM BATTLING WITH THE ICE.

The *Alert* had no sun for 142 days, and the darkness was nearly as deep at noonday as an ordinary moonless night. On March 2 the sun shone brightly, and the sledging was arranged for.

A sledge party left to find the *Discovery*, but returned exhausted, and Petersen was nearly lost. He afterwards died, poor fellow, and was buried by his comrades on Cairn Hill, on May 14. We have not space to follow all the sledging expeditions. For two months and a half this, the most monotonous of all traveling, was continued. The labor was most severe and incessant, the distance made only a mile or two a day. Scurvy began its ravages, and the northern expedition had been nearly overcome, when Lieutenant Parr returned to the ship for assistance. Summer had arrived by this time. Immediate help was despatched, but it was no easy task to find the men. Four of the party were alive, one had died. The sick man had been dragged on the sledge 39 days, and they had buried him after all in a solitary spot in the far north—"a paddle and a batten" made a rude cross. Five only of the seventeen of the party came back in working condition, and they were nearly exhausted.

The question now arose whether the *Alert* should remain, advance, or retreat. It was impossible to advance more than a few miles—the crew was suffering—and retirement was the most sensible act. So the vessel rejoined the *Discovery*, some of whose men had not returned, and great anxiety was manifested concerning them. At length the party appeared, after an absence of 130 days.

From Discovery Bay they struggled south in company, racing against winter. On September 9, Cape



MARKHAM REACHES THE HIGHEST LATITUDE.

Isabella (Smith's Sound) came in sight. Here letters were found which had been left by the *Pandora*. These were a cause of great joy, and when Disco was reached, and some coal procured, the explorers felt almost at home. On October 2, the ships sailed for England. The *Alert* anchored at Valencia on October 27, and the *Discovery* in Bantry Bay on the 29th.

A great deal had been accomplished by this expedition. The *Alert* had explored the west coast for 220 miles, the *Discovery* had surveyed the Greenland coast, and Stephenson placed a tablet over the grave of the brave Captain Hall of the *Polaris*, with a suitable inscription. The *Alert* men had attained the highest latitude ever reached, viz., $82^{\circ} 27' N$. The idea of the open Polar Sea then received its "quietus," for nothing but ice was there.

The Queen commanded the Admiralty to thank Captain Nares and the officers and men under his command, and Captain Nares was knighted. Some little dissatisfaction was expressed, but the effects of the work so ably done quickly extinguished any hostile feeling.

CHAPTER VIII.

THE GERMAN AND AUSTRIAN EXPEDITIONS.

DR. PETERMANN, the distinguished German geographer, warmly advocated the route between Spitzbergen and Greenland. At his instance, and with funds supplied by the leading scientific societies of Germany, a small vessel, the *Germania*, was fitted out, and left May 24, 1868. She was to start from Shannon Island, and explore the unknown Arctic seas beyond; but

meeting with enormous masses of drift-ice, she was obliged to return after reaching the high latitude of $81^{\circ} 51'$, and accurately surveying a small part of the Greenland coast hitherto but imperfectly explored.

The *Germania* and *Hansa* formed the second expedition. They left Bremen on June 15, 1869, in the presence of the King of Prussia, Bismarck, Von Moltke, and a thousand others. On July 5, they crossed the Arctic Circle; and on the 10th they parted company in the fog, and met again no more. An error in signaling occasioned the separation.

The *Hansa* continued along shore and got in amid the ice. The winter set in, and the crew managed to exist. They built a hut and killed bears, living with no very great discomfort till the middle of October, when the ice pressed on the ship and stove it in. The water gained when the ice retreated; the *Hansa* was doomed to destruction, and she sank on October 21. The masts were chopped down, and hauled, with the whole of the tackle, on the ice. Many of the scientific collections and apparatus were lost. They were only six miles from Holloway Bay, on the Liverpool coast, Greenland.

The crew escaped to the ice. The field of ice on which they had encamped drifted away to the south. The floe was examined. It was about seven miles in circumference, about two miles in diameter, and about 45 feet thick, five feet being above water. Christmas came, still they drifted. By the new year the ice gave symptoms of breaking up, the wind blew, and the danger was imminent. Though the floe had been considerable, no mishap occurred to them. The boats were fortunately in good condition, but day after day the ice

kept threatening, until at last the floe became so small that living on it any longer was out of the question. February, March and April had passed thus, and on May 6 the latitude of Bergen had been reached. The ice raft was soon abandoned, the boats launched, but the ice again stopped them. On June 6, after various adventures, the voyage was resumed, and the boats' heads put for Freiderichsthal, on the south-west coast of Greenland, near Cape Farewell, which was gained in June, 1870. Schleswig was reached in safety, where they were landed on September 1. Here finished a voyage with which there is none in the annals of Arctic enterprise to compare—Ross's escape from Barrow's Strait, Kane's from Smith Sound, or even the heroic tale of Barentz, pale before it. The story of the ice-bound *Hansa* and her crew will live in the annals of heroism as an everlasting honor to the German name, and accords them a place among the most daring of Arctic navigators.

The *Germania* meantime had continued her voyage, and endeavored, though without success, to reach the east coast of Greenland. She wintered in Sabine Bay. The explorers quite disagreed with Kane's "open sea" theory after making some sledge expeditions to verify the suggestion. Ice was everywhere, as far as the eye could see. Many surveys were undertaken, and much useful scientific information was obtained, but no new discoveries of any importance were made by either the *Hansa* or the more fortunate *Germania*. The homeward voyage passed without incidents, and the surviving ship reached Bremen on September 11, 1870, convinced that it was impossible to reach the Pole from the basis of East Greenland.



WRECK OF THE "HANSA."

Several other expeditions were despatched in 1869, but they did but little. In 1870 there was no great voyage accomplished, but in 1871 the Arctic regions were again looked at as the *Ultima Thule* of voyagers, and in June of that year Lieutenants Payer and Weyprecht sailed away to Nova Zembla, where they found an open sea with little ice. In October they returned to Tromsøe, after sighting the island they sought.

The North-east Passage now became the idea. That it could be accomplished by the way of Siberia, Payer believed, and the Austro-Hungarian Arctic Expedition was soon an accomplished fact. Petermann said the work accomplished by the little expedition was very valuable, and it was decided to supplement it. The steamship *Tegethoff* was fitted out: the equipment was most complete, many well-known Arctic voyagers lending their assistance. Captain Carlsen was pilot, Weyprecht commanded, and Payer was the land explorer.

The *Tegethoff* left Bremen on June 13, 1872, and came in sight of Nova Zembla on July 29. In August the *Fabjorn* yacht joined company; but little in the way of exploration was undertaken until August, when the yacht left the *Tegethoff* to her own devices. The gallant vessel pushed on, and was beset by the ice very soon on the north coast of Nova Zembla, where in many and great dangers the winter passed. On October 29 the sun disappeared for 109 days.

The winter over, the months of May, June and July were spent in trying to saw the *Tegethoff* out of the ice; but all the efforts made were futile; and as Payer remarks, "*we never again were destined to see our vessel in water.*" The north wind in July sent the ice south-



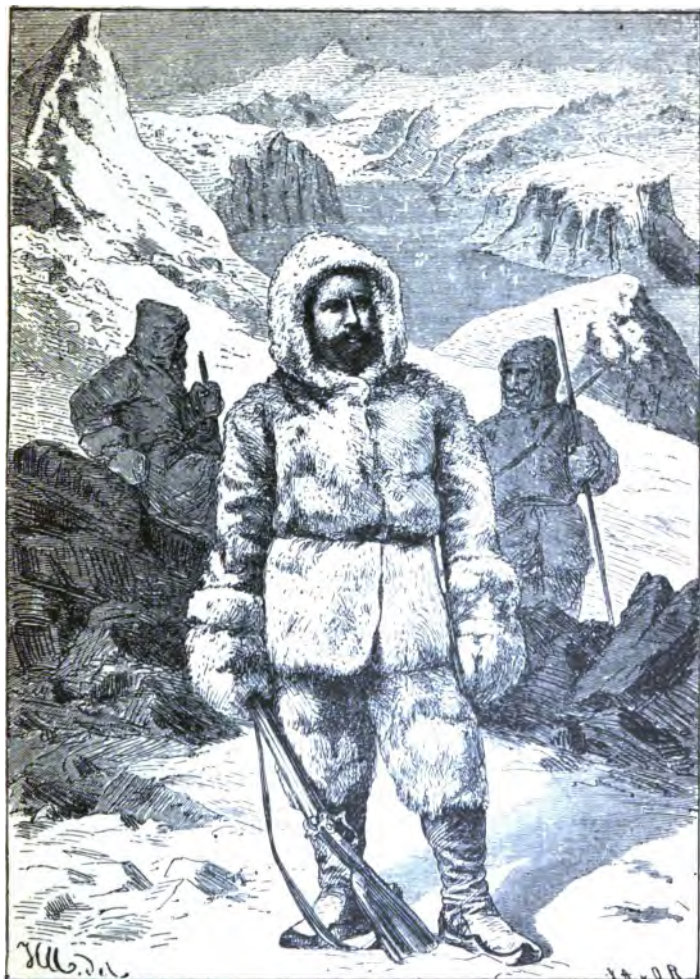
THE ABANDONMENT OF THE "TEGETHOFF."

ward, but in a month the return drift set in with southerly winds, and no hope of the breaking up of the ice was entertained. In August, 1873, the crew sighted land; it was approached, and named after Count Wilczek, the originator of the expedition.

The gloom of Arctic night prevented any more exploration. The vessel drifted northward, and at length the floe was driven on an island, where it remained, with the vessel three miles from the shore. The second winter now began. In January the cold was very severe: the oil froze, the lamps went out, and the brandy even was congealed into a solid mass. Bears paid the voyagers frequent visits, and many were shot.

In March, Payer and his party went on a sledge journey in a north-west direction to Hall Island. This region seemed "devoid of life"—ice and great glaciers everywhere. The cold was intense. This party returned, and undertook another journey to the north with the sleighs, equipped as directed by McClintock. This expedition discovered Franz Josef Land, as it was named, after the Emperor. It is like Eastern Greenland—a "land of desolation," with high mountains and vast glaciers, of a greenish-blue color. The vegetation is poor, and the country is uninhabited.

Farther on they reached another territory, which they named Prince Rudolf Land, the habitation of millions of sea-birds, and thousands of bears, seals, and foxes. A great glacier was crossed, but as it was quitted an immense fissure engulfed the sleigh with the stores, while the others only narrowly escaped by cutting the traces. Payer hurried back for assistance, and at length dogs, men, and sleigh were pulled up, safe and nearly sound. Rounding Auk Cape, the explorers reached open water.



LIEUTENANT PAYER AT PAYER'S PEAK.

Pressing on to latitude $81^{\circ} 57'$ north, the party reached their farthest point. From an elevated position the explorer made his observations, which led him to the conclusion that there is no open Polar sea, yet that the ocean is not always covered with ice. There is a medium which a favorable year would improve, and render navigation near the shore possible. Having deposited a record of the visit, the party returned over the 160 miles they had come.

One more little journey was made, and then the thoughts of the officers and men turned to home. The *Tegethoff* had to be abandoned, and a most adventurous boat and sledge journey undertaken. On May 20, the ship's colors were nailed to the mast, and the retreat was commenced. Provisions were packed in boats, the boats placed on sleighs, but little progress was made at first as all hands were required for each sleigh in turn. *Two months* were occupied in making a distance of *eight miles*—and a third winter in the ice seemed probable.

At last, in July, they made a mile a day. In August they reached the edge of the pack, when the sleighs were abandoned, and the dogs killed, as no room could be spared. The boats then crossed open water to Nova Zembla, and at the end of 96 days after leaving the ship sighted a Russian vessel, which brought them to Vardoe in Norway, where the voyagers landed in September, 1874, 812 days after they had left Bremerhaven.

The success of the expedition was unquestionable, for land was discovered 200 miles north of Nova Zembla. The success of the sleighing was due to McClintock's advice.

The *Tegethoff*, we see, drifted *north*—other vessels we

have read of drifted *south*. Does not that indicate a simultaneous movement of ice around the Pole on both sides? The American side going south as the ice-floe on the Asiatic side ascends—as glaciers in Switzerland, which are connected, advance and recede in turn. This idea would go to prove that no open sea exists there; the ice covers the whole of the Polar Ocean, and moves north and south correspondingly. This is, however, only speculation, but as the *Tegethoff* is said to have been drifted by the wind, which must have been southerly, and therefore northerly on the other side, the fact will not militate against the idea suggested.

Thus, after an interval of nearly 200 years without any endeavor to make the North-east Passage, the Austro-Hungarian Expedition ended in failure. They did not succeed, but we will now turn to the great Nordenskiöld, who *did* succeed.

CHAPTER IX.

NORDENSKIÖLD, AND THE NORTH-EAST PASSAGE.

ADOLF ERIK NORDENSKIÖLD was born in Finland, in November, 1832. His father was a distinguished naturalist; Erik often accompanied him in his expeditions, and thus early acquired a taste for natural history and research. He entered the University at Helsingfors in 1849. The stern rule of Russia subsequently compelled young Nordenskiöld to go to Sweden. The governor of Finland, fancying he detected treason in some after-supper speech, Nordenskiöld was obliged to depart; but this was the turning-point in his career.

Nordenskiöld studied hard, and in 1858 made his first acquaintance with Arctic seas in Torrell's Spitzbergen expedition. In 1861 he made a second voyage to Spitzbergen. He led himself similar expeditions in 1864, 1868, and 1872, when he reached the highest latitude ever attained in the eastern hemisphere; and made a scientific journey to Greenland in 1870.

In 1875 and 1876 Nordenskiöld made two voyages to the Yenisei River and up it. By this course he opened up Siberia to trade, and received the thanks of the Russian Government for inaugurating a sea-route to Siberia. But these voyages were completely eclipsed by the expedition undertaken in the *Vega*, in which he accomplished the long-desired North-east Passage from the North Atlantic to the North Pacific Ocean eastward. The ease with which he had accomplished the two voyages to the Yenisei River urged him to proceed with the expedition which he had been studying for years, the discovery of the North-east Passage.

Sebastian Cabot was the first adventurer in the work destined to be accomplished by the Swedish explorer. More than 300 years ago Cabot equipped three ships for the "Merchant Adventurers," and put them under the command of Willoughby and Chancellor in 1553. This ended in disaster. In 1580 the Muscovy Company, as the "Adventurers" called themselves, sent out Arthur Pitt, who could not open the "pack" ice. Barentz, who tried three times, in 1593, 1595, and 1596, was closed up in the ice of Nova Zembla, and perished. Hendrick Hudson tried in 1607-8. The Danes made the attempt in 1653.

Thus the North-east Passage became a dreaded and a sealed course to the mariners of all nations. It was

deemed impossible to break through the icy barrier; and the Russians made the attempt only to prove the assertion by failure. But when Nordenskiöld had reached the Kara Sea, and the Yenisei River, he began to think he could also solve the long-tried problem of the North-east Passage eastward to the Pacific.

Nordenskiöld purchased the steam-whaler *Vega*—a name now celebrated throughout the civilized world. She was equipped and manned under Government auspices, and provisioned for two years. She sailed from Gothenburg on July 21, accompanied by the steamer *Lena*, commanded by Johannesen from Tromsøe. There were supply vessels in company, but our narrative (which is



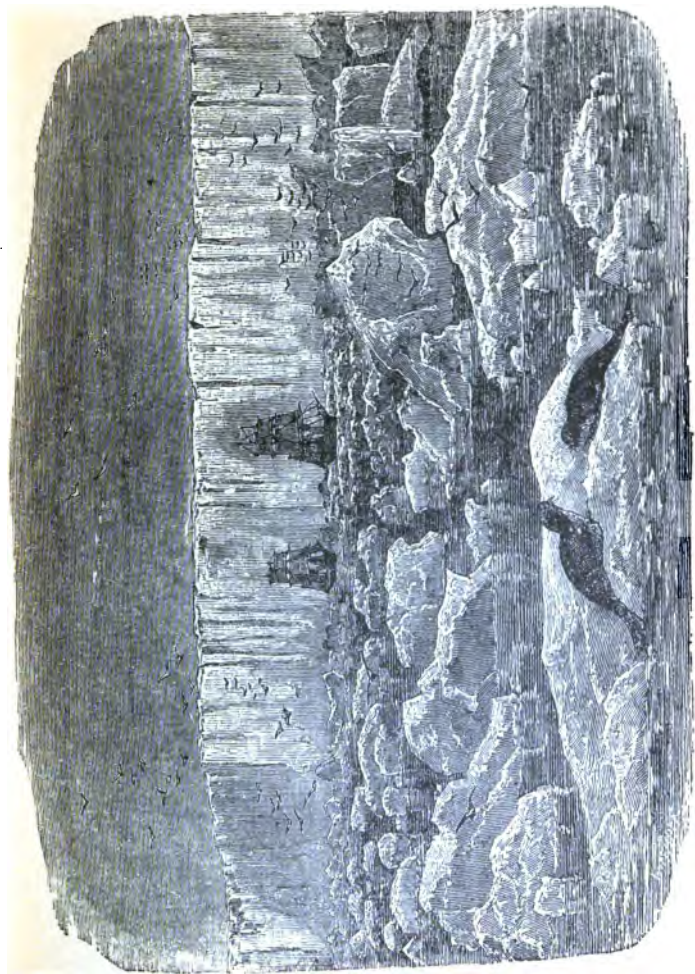
ADOLF E. NORDENSKIÖLD.

compiled from "Nordenskiöld's Voyages," and other sources) will deal with the *Vega*, and incidentally with the *Lena*, till she parted company at the mouth of the river whose name she bears. In the expedition were included many scientific men, and the crews were composed of picked men,

The vessels rounded the North Cape, and on July 29 sighted Nova Zembla. Then they passed the Yergar Strait and entered the Kara Sea, the immense gulf lying between Nova Zembla and the north point of the Asiatic continent, Cape Chalyaskin. On July 31 the little fleet was united at Chabarook (Charbarova). The vessels which had accompanied the *Lena* and *Vega* went up the Yenisei River with cargoes, and returned safely to Norway. The *Vega* and *Lena* proceeded, and after some delays the North-east Cape (Cape Chalyaskin) was reached for the first time. Flags were hoisted and salutes fired to emphasize the fact, and they were acknowledged by an immense bear that came out upon the ice to welcome the ships. Hence fogs and occasional ice-floes hindered the navigation. Many very interesting scientific searches were made, and after August 23 the sea was smooth and free from ice up to the delta of the Lena River. Here the vessels parted company on August 28, the *Lena* to go up the river, while the *Vega* proceeded alone to the Siberian Islands.

Many interesting remains of the mammoth animals were discovered in these islands, and the supply of ivory must be very valuable to the seekers. The ice was too rotten to permit of landing, and the boats could not pass in, so Nordenskiöld reluctantly relinquished his intention to explore those almost unknown islands, and the animal remains which abound there.

The *Vega* continued her uninterrupted course eastward till September. Then snow fell, and the Bear Islands were covered. The navigation became difficult; the coast was cautiously skirted till, as September wore on, the nights became too dark for sailing, and the



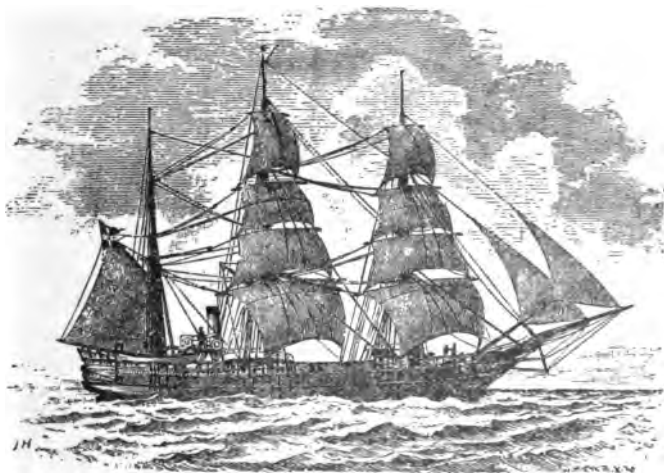
ICE-BARRIER OF THE ANTARCTIC CONTINENT.

Vega was obliged to come to an anchor every evening. On these occasions the natives came and made friends with the voyagers, and subsequently these Tchuktches welcomed the foreigners. The description given of the natives and their dwellings is curious. They live in large tents, which inclose sleeping-places or a kind of inner chambers, heated and lighted by an oil lamp. In these inner rooms the native women sit, with very little clothing on. In summer a fire is kept burning in the center of the hut, and the smoke goes up through a hole in the roof. In winter there is no fire, and presumably the hut is closed against the outer air. The The Greenlanders and Tchuktches use similar household articles: they trade for needles, knives and tools, linen shirts, etc., and especially brandy. Everyone smokes tobacco when he or she can obtain it. When it cannot be had, some herbs are chewed and smoked, after being dried behind the ears. Men and women seldom wear head coverings; they have tunics and trousers of reindeer skin, mocassins or shoes of bear-skin or walrus-hide; the women plait their hair and wear it long. The men cut theirs, except the outer margin, which is combed down in a "fringe." The faces are painted or "tattooed" by both sexes.

The *Vega* continued her eastward course, meeting with little incident, but continually adding to the information already acquired. So on till September 27, when, in the strait that separates Asia from America—near the entrance of Behring's Strait, the vessel got imprisoned in the early-forming ice. The rising north wind rapidly piled up the hummocks, and in a short time all hope of quitting the place until the summer had to be abandoned, but very reluctantly, by Norden-

skiöld. "One single hour's steaming would have probably been sufficient to traverse the distance" between their position and the open strait, and one day earlier no difficulty would have presented itself!

This was extremely disappointing, and Nordenskiöld writes pathetically about been frozen in so near the goal



THE "VEGA."

he had been so long aiming at. It was "the one mishap" which had attended his Arctic exploration. In this condition the vessel remained for 264 days, the time passed nearly in darkness, but not unpleasantly, for the scientist has resources which set time at defiance. Good health and spirits were present, and the natives were friendly.

"On July 18, during a stiff breeze from the south, I noticed that the line to our tide-gauge showed astern; and I saw the ice to the landward of us separating from the outer ground-ice belt. The engine fires were lit and the vessel set in motion. Half an hour later, we were out in a channel which continually increased in breadth the farther we proceeded, and before evening we were in a comparatively navigable sea. After a detention of nearly 300 days, we had at last got away as quietly and with as little risk or trouble as if we had gone out to sea from a common harbor.

"On July 20 we passed East Cape, and had then quite completed the North-east Passage. In celebration of this event, the national flag was hoisted and a salute given. The same evening we anchored at the mouth of St. Lawrence Bay.

"The North-east Passage has unquestionably been accomplished for the first time by the Swedish steamship *Vega*. I attribute the circumstance that this has occupied a year, when it ought to have taken only two months, had there been no special difficulties, to the unusually unfavorable condition of the ice during September, 1878. To answer the question if the North-east Passage can annually be made in one season? I am not able, because the ice conditions are so different in different years. The part of the sea nearest the coast is certainly free from ice, during the summer and autumn months, opposite to and east from the efflux of a river; but against this must be placed the difficulties to be met with at and around Cape Tchelyuskin and Taimyr Island. That a passage is to be found there also once or several times in the summer is equally certain, but that may occur so late that before one can

reach Behring's Straits the winter has again set in. At the same time I will not by any means say that there may not be found there during the whole summer and autumn a channel free from ice; but as there is no river effluent in the vicinity of Cape Tchelyuskin and Taimyr



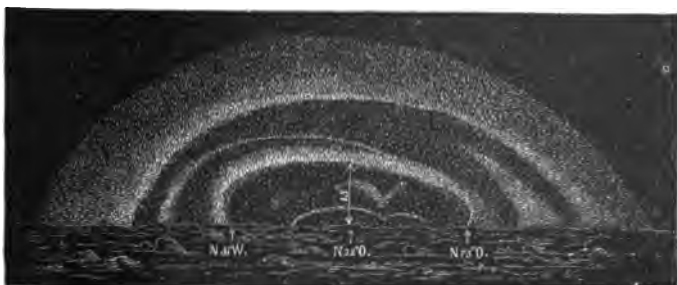
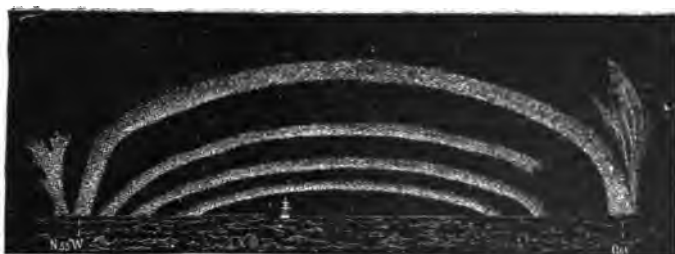
THE "VEGA" IN THE HUMMOCKS.

Island, which, with sufficient strength, can force the ice northward, as is the case with the great rivers Obi, Yenisei, Lena, and Kolyma, it may be inferred that the ice there is principally influenced by the winds—namely, that the north wind forces the ice toward land, the



WINTER DRESS OF THE "VEGA" MEN.

south having a contrary effect, and that, consequently, the doubling of these points cannot be calculated upon with certainty at any time, even during the navigable season. The North-east Passage cannot, therefore, in its entirety be made available for the purposes of commerce, but still an annual traffic might easily be carried on from the westward to the Obi and Yenisei, and from the eastward to the Lena. Unquestionably, the way now lies open to Siberia's three greatest rivers; and that land, so rich in minerals, timber, and grain, whose export and import trade has hitherto been conducted by



AURORA AT THE "VEGA'S" WINTER-QUARTERS, MARCH, 1879.

means of caravans, ought now to obtain a practicable route as a connecting link between the New and the Old Worlds.

"At St. Lawrence Bay we remained only till midday on the 21st, when we weighed anchor and steered over to the American side, where we anchored at Port Clarence. We remained there until the 26th, when we again crossed over to the Asiatic side, and anchored in Konyam Bay. From thence we went, on the 28th, to the St. Lawrence Island, remaining there from July 31 till August 2. We then steered for Behring Island, where we anchored at its south-west point, on August 14. We found here a small village, with a church and 25 wooden houses built and owned by an American firm, Hutchinson & Co., who here and on the neighboring islands carry on seal-fishing. The inhabitants of the island, consisting of a few Russian officials, some employees of the company and natives of the Aleutian Islands, make in all about 300 who reside in the village. There we received our first news from Europe through American newspapers, the latest of which were printed in San Francisco, in April, 1879, and brought from thence by one of the company's steamers. On August 19, we left Behring Island, and set our course for Yokohama, where we arrived on September 2."

The homeward journey was made by the Suez Canal to Europe, where the welcome awarded to the brave explorer was a veritable triumph.

In his "Voyage of the *Vega*," Nordenskiöld says: "Was the *Vega* actually the first, and is she, at the moment when this is being written, the only vessel that has sailed from the Atlantic by the north to the Pacific? This question may be answered with considerable cer-

tainty in the affirmative, as it may also with truth be maintained that no vessel has gone the opposite way from the Pacific to the Atlantic.

"It ought to be remembered that the voyage of the distinguished Arctic explorer, McClure, carried out with so much gallantry and admirable perseverance, from the Pacific to the Atlantic, along the north coast of America, took place to no inconsiderable extent *by sledge journeys over the ice*, and that no English vessel has ever sailed by this route from the one sea to the other. The North-west Passage has thus never been accomplished by a vessel.

"The *Vega* is thus the first vessel that has thus penetrated by the north from one of the great world-oceans to the other."

Thus finally was reached the goal towards which so many nations had struggled all along from the time when Willoughby ushered in the long series of north-east voyages. Willoughby and all his men perished as pioneers of England's navigation and of voyages to the ice-encumbered sea which bounds Europe and Asia on the north. Innumerable other marine expeditions have since then trodden the same path, always without success, and generally with the sacrifice of the vessel, and of the life and health of many of the brave seamen. Now for the first time, after the lapse of 336 years, and when most men experienced in sea matters had declared the undertaking impossible, was the North-east Passage at last achieved.

CHAPTER X.

THE VOYAGE OF THE JEANNETTE: DE LONG. (1879-1881.)

GEORGE WASHINGTON DE LONG was born in New York City, on August 22, 1844. When a boy he read the tales of the naval exploits of the war of 1812, and was much taken with the stories of the heroism of the young midshipmen, Farragut and Porter. In 1857 he was selected as a candidate from the public schools for appointment at the U. S. Naval Academy, but to his great disappointment his parents refused their consent. They wished him to become a lawyer, priest, or doctor; but he had no predisposition for either of these professions. Gaining a reluctant consent from his parents he subsequently made another effort for the appointment, and eventually secured the place.

In 1893 Lieutenant De Long was ordered to the *Funiata*, which was attached to the North Atlantic Squadron. The Government was induced to send a man-of-war to the relief of the *Polaris*, and the *Funiata* was selected for the duty with De Long as commandant. He was ordered to "carry out the search as far as it is positively prudent to advance to the northward." The *Tigress* was to proceed to Baffin's Bay into Smith's Straits to search for the *Polaris* up to the point where she was last seen in November, 1872, and "the little *Funiata* is not to be jeopardized, or pushed into the ice-packs, if you meet them; nor is she, or the lives of those on board, to be involved in any way it is possible to avoid."

On August 2, the *Funiata* set out, but struck bad weather, which lasted to August 8, when, according to

De Long's report, "our situation became one of great danger. Icebergs near us, 100 feet high, had the spray from the sea thrown over their tops. We were half-



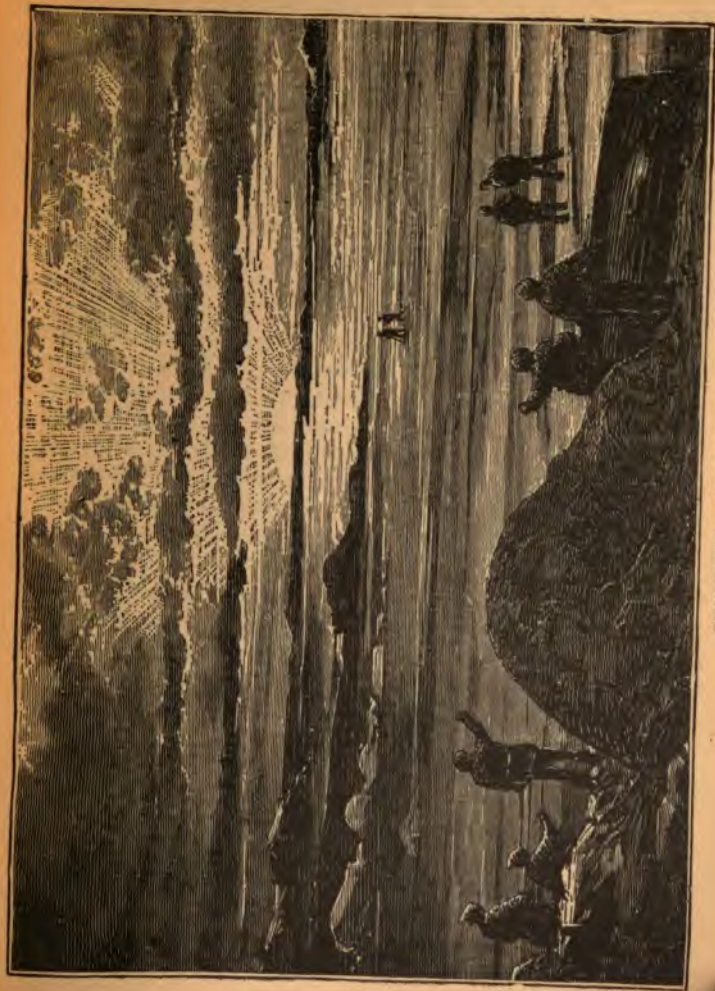
GEORGE W. DE LONG.

buried in the seas at times, shipping quantities of water, deluging everything in the boat. Providentially everything held, and we were able to keep the boat under

control. On the 9th came a lull. Under our orders to return when our fuel was half-expended, and on no account to run the boat into the ice-pack, there was nothing to be done but to give up the search, which was reluctantly done, and the vessel returned to Newfoundland." Here they learned that the crew of the *Polaris* had been picked up, as we have seen.

This apprenticeship to Arctic difficulties started De Long. In 1873 he had an interview with Henry Grinnell, and urged him to fit out another expedition to the Pole. Grinnell replied that he was too old a man, and had already done his share; and suggested the trying of some younger men, like Bennett, or others. DeLong acted on the hint and communicated with James Gordon Bennett, of the *New York Herald*, but it was not until 1876 that Bennett determined to despatch a vessel. The *Pandora* was purchased and renamed the *Jeannette*, and on July 8, 1879, she started out from San Francisco. Balloon ascensions were discussed, but Markham and Hull, experienced Arctic travelers, considered such explorations as "simple madness," and the idea was dropped. George W. Melville was the chief engineer of the expedition.

The *Jeannette* was to penetrate the Arctic waters by the way of Behring Strait, and on August 28 she passed through it, a heavy fog blowing over the bluff headland on the Asiatic side. On the 30th a party landed at Cape Serdze Ramer, and ascertained that Nordenskiöld had arrived there safely a month before. The course of the *Jeannette* was now directed toward Wrangel Land, and on September 4 she sighted Herald Island, so called by the explorer of the English ship, *The Herald*. They drifted slowly along, and on September 16 they



THE RETURN OF THE SUN.

estimated that Herald Island, which ten days earlier they thought to be but five miles away, was nearer 30 miles off. Around this island the expedition drifted for some time, but by October 11 she was *fast in the ice*, and the usual precautions for wintering were made. "Wintering in the pack," De Long writes, "may be a thrilling thing to read about by a comfortable fire, but the actual thing is enough to make any man prematurely old; sleeping with all clothes on, and starting up anxiously at every snap and crack in the ice outside, or the ship's frame within." On November 24 the *Jeanette* broke adrift from the floe, and "the following day was a most anxious and exciting one. If the ship was free when the ice moved she would go along with it; if she were tied up she might have to stand the brunt in an unfavorable position. The advancing ice soon was upon her, and she was pushed, forced, squeezed, driven through the mile of a canal amid a grinding and groaning of timbers, and a crashing and tumbling of ice that was fearful to behold."

The winter passed in its usual monotonous routine of duties, and De Long writes in a depressed state of mind: "When we add to wintering in the pack, with all its uncertainties and terrors, the knowledge that we attained no high latitude our first season, made no discoveries as far as we know, have made no useful additions to scientific knowledge, we cannot help feeling that we are doing nothing toward the object of the expedition."

On December 6 the cold spell arrived. "We begin to feel the darkness. Four hours daylight is not much. We haven't even the moon now to keep us company. Xmas day, the dreariest I ever experienced, and passed in the dreariest part of the world."

In January, 1880, the ship sprung a leak, and it was difficult to start the steam-pump, but Melville succeeded in getting it into working order. They pumped away for three months, barely keeping the water in check. The weather was good and the crew were all in perfect health. On April 17, 1880, they decided to "reduce the rations." June brought gloomy weather—the height of summer and the depth of discouragement—"over nine months have we been held fast and drifted here and there at the will of the winds." There was little change in this depressing state of affairs till July, when at length the leak was stopped. On examining the stock of coal, De Long found he had only 56 tons left, of which 30 must be kept for cooking and warming, leaving 26 for steaming. "With this," he exclaims, "I have to make the Pole, accomplish the North-west Passage, or go back empty-handed." On July 4 he writes: "We certainly have not realized our anticipations by long odds, and I see in the faces around me no hope of so doing."

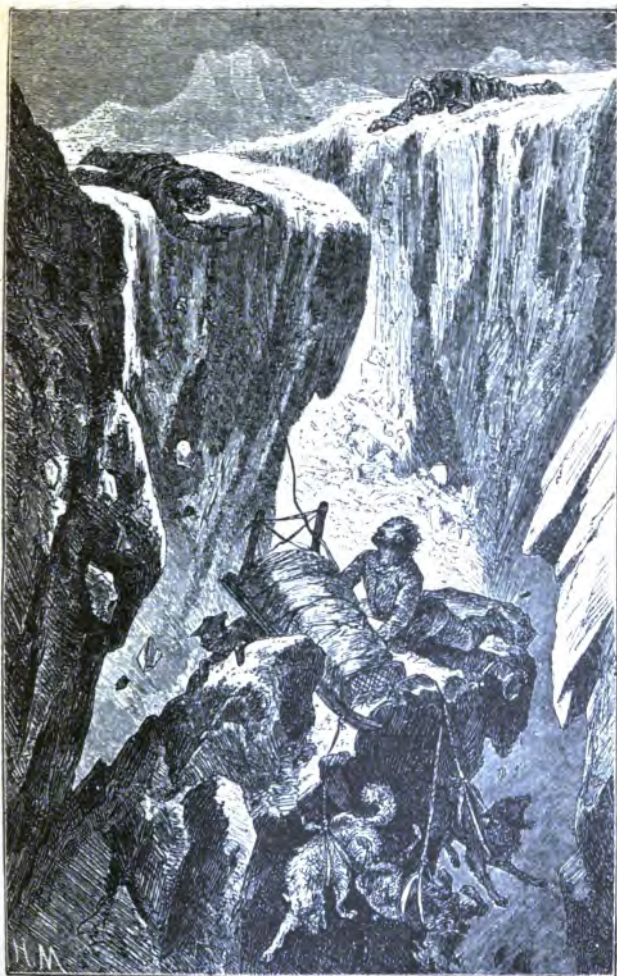
They dressed the ship in honor of the day.

De Long's first entry on New Year's Day (1881) is, "I hope to God we are turning over a new leaf in our book of luck." In February the sun reappeared. In May he records, "I do not care to commit to paper even my own ideas," till, on the 16th, land was seen, the first land that had greeted their eyes since March 24, 1880. "Fourteen months without anything to look at but ice and sky, and 20 months drifting in the pack, will make a little mass of volcanic rock as pleasing as an oasis in the desert." The island was located in latitude N. $76^{\circ} 47' 28''$, longitude E. $159^{\circ} 20' 45''$, and called Jeannette Island. On May 24 more land was in

sight, and named Henriette Island. Melville was despatched May 31 to take possession; and landed June 2, hoisted our flag, erected a cairn, and placed in it a record. On June 8 the ship was drifting rapidly to the westward of the island, and on the 10th the ice suddenly opened, and next day the first crash came. The ice commenced to move toward the port side, but after advancing a foot or two came to rest. It had advanced again toward the port side until these floe pieces had received the thrust, and everything quieted down again. Later the ice came down in great force all along the port side, jamming the ship hard against the ice on the starboard side of her, and causing her to heel 16° to starboard. Orders were now given to get out provisions, clothing, bedding, ships books, and papers, and to remove all sick to a place of safety. While engaged in this work another tremendous pressure was received, and at nightfall the ship was beginning to fill.

From that time forward every effort was devoted to getting provisions, etc., on the ice, and it was not desisted from until the water had risen to the spar deck, the ship being heeled to starboard about 30°. The starboard side was evidently broken in abreast of the mainmast, and the ship was settling fast. On the 12th, the mizzenmast of the ship went by the board, and her lower yard-arms rested on the ice. Then she sank till her smokepipe had nearly disappeared, and righted to an even keel and slowly sank. So ended the *Jeannette*.

For the next six days all hands were busy preparing for the march; sledges were loaded and men assigned, clothing served out, and an order of march and daily routine issued; and on June 18 the ship-wrecked explorers started on their journey. All except five were in



FALLING INTO AN ICE FISSURE.

good health. At no time of the year was traveling worse than at this; the ice was in bad condition and progress almost impossible.

From June 26 till July 14, they marched over the frozen ocean. The terrible difficulties they had to contend with can be surmised when we know they had to build five ice-bridges in one day.

Toward the end of July evidences accumulated that land was not far off, and it was hoped that it was the Liakoff Islands. On the 28th the fog cleared up a little, and the situation improved somewhat, as a few pieces of ice offered a convenient bridge. A large floe cake was ahead. Everything was embarked on an ice-cake for a ferry-boat, and a hauling line run through the floe. "By great effort we got our piece clear and commenced to haul over. Suddenly everybody gave a shout, 'Look!' Away up over our heads 2500 (?) feet towered the land, and we were sweeping past it like a millstream. Soon our floe was reached. Away we jumped our sleds and boats and, seeing two or three large cakes nearly together, ran everything rapidly over until we at last stood at the base of the ice-cap. It was a narrow squeeze, for the men with the tents and the remaining loose provisions on their shoulders had hard work to run fast enough to get on the last cake before the other cakes were swept away. Now that we were on the last cake our situation became critical. We could not get up on the ice-foot, for ten feet of water and small lumps intervened, and we were sweeping along by it at a rate of three miles an hour. Our cake was none of the strongest, and in the swirling and running masses and small bergs I feared we should be broken and separated. It was an anxious moment.

The south-west cape of the island was not half a mile away, and this was our last chance. Over two weeks of dragging and working to reach this island seemed about to be thrown away.

"One corner of our cake fortunately drifted near a fast berg, and by making a flying leap through the air we escaped in safety. At last! But though standing still, we were not ashore. Glad enough I was to get a solid foothold, anywhere, and I gave the order to camp. After supper, we waded, or jumped, or ferried over to the land, where we held on as well as we could to the steep slopes of debris, while our colors were displayed. When all had gathered round me, I said, 'I have to announce to you that this island, towards which we have been struggling for more than two weeks, is newly-discovered land. I therefore take possession in the name of the President of the United States, and name it Bennett Island.'"

On August 6, they left Bennett Island in three boats. Winter had set in, but as long as there was open water, their progress to the south was rapid. The sleds could not be carried across the open water, between the islands, for which they were making, and the coast of Siberia. The sleds were cut up for firewood, but next day they found themselves shut solidly in the ice, and it became evident their existence now depended on their provisions. On August 18, the *last* ration of bread was served, and the Liebig was reduced to one-half ounce rations; coffee was served for breakfast only, and tea at other meals. The absence of tobacco was seriously felt. Those who had any used it sparingly—the others smoked coffee-grounds and tea leaves mixed. The last ration of lime juice was issued on the 30th.

September 10 saw them at Semenovski Island, and De Long had great hopes of being able to go on to the Lena without difficulty. Cape Barkin, the point of destination, was only 90 miles distant, when, on the night of the 12th, the wind freshened to a gale. At 9 P. M., De Long lost sight of the whale-boat, and at 10 P. M., of the second cutter. Melville describes the scene in these graphic words :

"When De Long waved me permission to leave him, I hoisted sail, shook out one reef, and as we gathered way the boat shot forward like an arrow, and the spray flew about us like feathers. Heretofore we had been running dead before the wind on our south-west course for the land, but the heavy sea and lively motion of the boat caused the sail to jibe and fill on the other tack, whereupon we would broach to and ship water. For this reason I hauled up the boat several points, or closer to the wind, and our condition at once improved. Now that we were separated, I resolved to concern myself directly with the safety of my own boat; so that when one of the men said that De Long was signaling us, I told him he must be wrong, and further directed that no one should see any signals, now that we were cast upon our own resources.

"When last seen the second cutter was about 1000 yards away, and the first cutter (De Long's) probably midway between them. After a miserable day and night De Long and 13 others landed at the Lena Delta, and resolved to walk to a settlement about 95 miles away; for this journey they had four days' provisions and were all well.

"Progress was terribly slow. To reach anywhere in four days with men disabled is out of the question."

Nindemann and Alexey were sent out to shoot deer if possible, but, although they saw a herd, they could not get near it. On September 21 they were 87 miles from a probable settlement, with two days' rations and three lame men who could not make more than five miles a day, and De Long concluded to halt his main body at a spot where some huts were discovered standing, and to send on two good walkers to get relief. But the capture of two deer changed this plan, and they struggled forward, now and then shooting a deer, now and then catching a sea-gull, and at times trying to fish. Ericksen was dying and had to be carried. On October 1, De Long writes: "My chart is useless. I must go on trusting in God to guide me to a settlement, for I have long since realized that we are powerless to help ourselves." On October 3, their last dog was killed for food; on the 6th Ericksen died, and "everybody is very weak," and on the 7th, the record says, "No provisions left;" and on the 9th, Nindemann and Noros were sent ahead to attempt to reach a settlement. Then De Long's diary has shorter entries: "Nothing for supper but a spoonful of glycerine. October 12, unable to move. October 14, everybody getting weaker. 17th, Alexey died." Then comes the last page of the diary:

"Friday, October 21, 131st day—Kaack was found dead about midnight between the doctor and myself. Lee died about noon.

"Saturday, October 22, 132d day—Too weak to carry the bodies of Lee and Kaack out on the ice. The doctor, Collins, and I carried them around the corner out of sight. Then my eye closed up.

"Sunday, October 23, 133d day—Everybody pretty weak. Slept or rested all day, and then managed to get

enough wood in before dark. Suffering in our feet. No foot-gear.

"Monday, October 24, 134th day—A hard night.

"Thursday, October 27, 137th day—Iveson broken down.

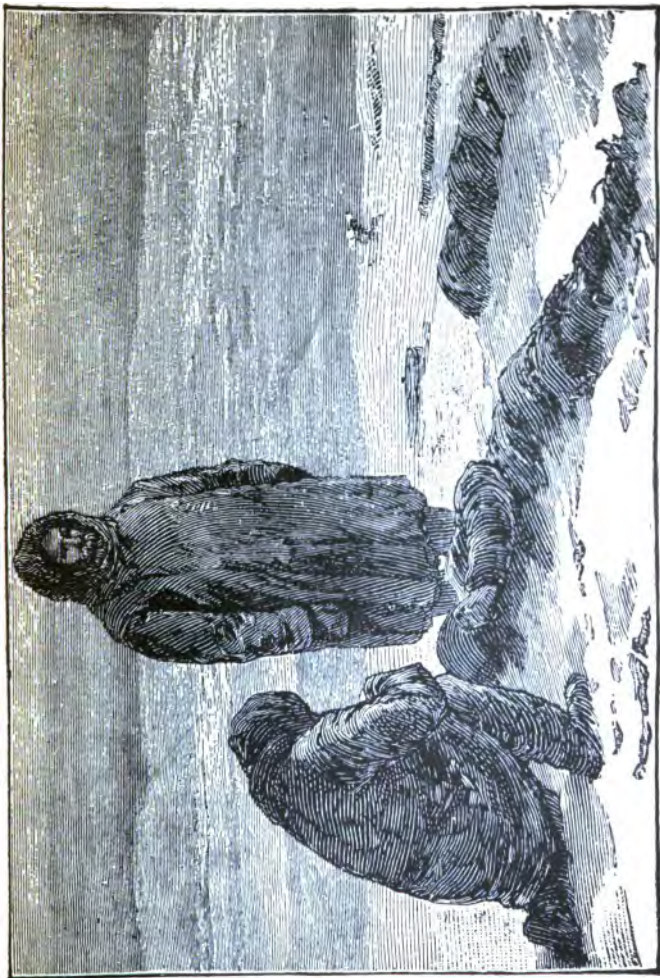
"Friday, October 28, 138th day—Iveson died during early morning.

"Saturday, October 29, 139th day—Dressler died during night.

"Sunday, October 30, 140th day—Boyd and Görtz died during night. Collins dying."

It is beyond the power of words to add to the pathos of these simple lines.

Nindenmann and Noros, starting on October 9, were instructed to make a forced march to Ku-Mark-Surta for relief. They occasionally took refuge in huts, where they found scraps of decaying offal, but before the 15th they were reduced to eating their seal-skin trousers, and drinking willow tea. On the 19th they were so exhausted that they could scarcely move for five minutes at a time and dysentery attacked them; but, on the 19th, a native arrived at their camp, and soon others came in. Nindemann endeavored to explain to them that De Long's party were perishing 20 miles to the north, but the natives shook their heads and conveyed the two sailors to Surta. On the 27th a Russian appeared, who placed them in charge of a man who was to take them to Belun. They gave him a note stating their condition, and on the 29th they arrived at Belun, and there, on November 2, to their intense joy, Melville arrived, having received their note of the 29th. Melville could make himself understood in Russian, and the two sailors now had the best the place could afford.



The weather was remorseless, dogs and men all suffered, provisions were scarce and bad, and reindeer teams could not be procured, so nothing was left but to return to Belun, which was reached November 27. On December 1, Melville set off and came to Yakutsk on the 30th. Here the Russian governor lent every assistance; and three interpreters were engaged. On January 27, Melville reached Belun, and arranged for a systematic search. The weather was terrible, too severe even for the natives, and progress was almost impossible; indeed, the party was storm-bound till March 14.

Nindemann recognized some of the features of the country, and under his directions careful search began. On March 23, 1882, a fire-bed with many footprints was discovered, and the trail was found. As they proceeded to explore the banks of the river, they found some sticks protruding from the snow and in them a Remington rifle, and near the fire-bed the hand and arm of a body rose up out of the snow. Melville at once recognized De Long. He lay on his right side, with his hand under his cheek, his head to the north, and his face to the west. Four feet from him lay his note-book, where he had tossed it with his left hand, which looked as if it had been frozen stiff in the act. Near their chief lay Ambler and the Chinese cook. The bodies were piously removed, and Melville ascertained that the report of Dr. Ambler having committed suicide was false. Next day further exhumations were made, and the bodies of Boyd, Görtz, Ivesen, Collins and Dressler recovered, and last of all Lee and Kaack, whom De Long had carried "round the corner" when he was too weak to bury them.

The burial-ground chosen for the resting-place of these Arctic martyrs was a bold promontory overlooking the Polar Sea. A pit three feet deep was excavated, and in it the cairn coffin was placed, covered by a heavy lid, on which stood a cross.

Melville then began a search for the second cutter's party, but no traces of the lost explorers were ever discovered.



LIEUTENANT MELVILLE.

The United States Government subsequently despatched a vessel to bring back the remains of this hapless crew and its gallant commander for interment in our own country. Of all records of Arctic travel, this one is the most distressing. The expedition ended without any addition to useful knowledge. It was

organized but to advertise a newspaper; the ship was not adapted for its undertaking, and the crew had no experience of Arctic work. That all the crew, from its commander downwards, displayed the utmost gallantry, the most remarkable fertility of resource, and the highest and calmest endurance, is to their credit, and reflects honor on every American seaman.

CHAPTER XI.

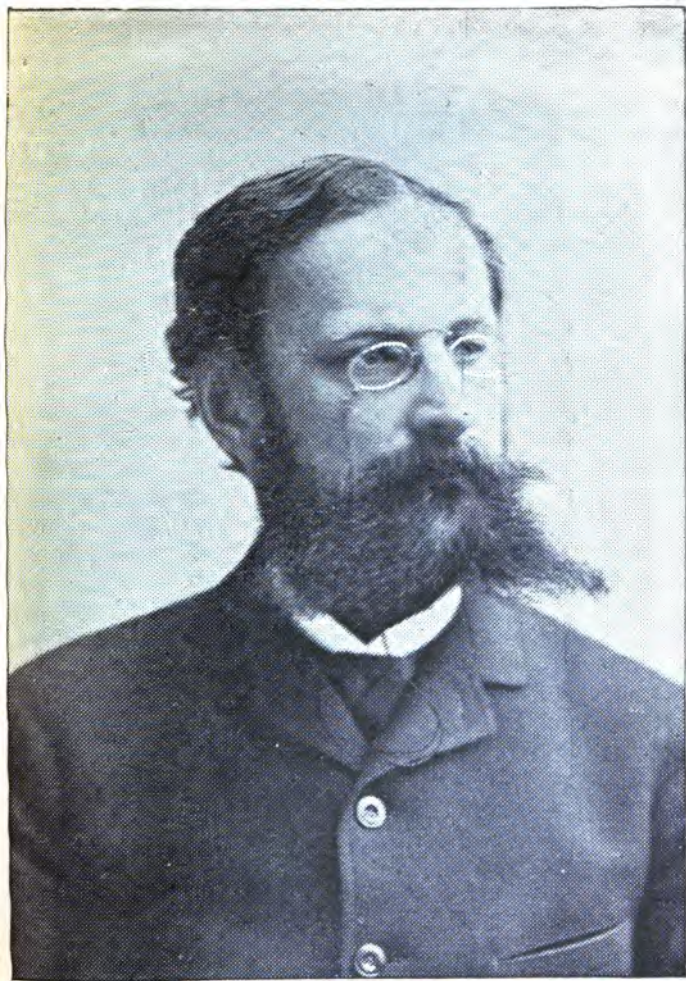
THE LADY FRANKLIN BAY EXPEDITION TO GRINNELL LAND, AND THE ATTAINMENT OF THE FARTHEST NORTH.

THIS expedition was established for work of scientific observations and exploration by Congress, in 1881. The steam-whaler *Proteus* took the party from Newfoundland to Lady Franklin Bay. The command was entrusted to Lieutenant Adolphus W. Greely, of the U. S. Navy. Beside the doctor and two assistants, there were 21 enlisted men in the party.

The expedition was to remain for three years without direct communication from the outside world. The survivors were rescued on June 22, 1884, having been gone nearly three years. Only five of the party returned alive.

Godhaven was reached July 16, 1881. Along the Greenland coast an occasional iceberg was seen, but in Disco Bay over 100 were in sight at one time. Upernavik was reached July 24.

The *Proteus* had a remarkably favorable passage across Melville Bay; but 36 hours from Upernavik to Cape York. The *Alert* ran across in 72 hours, and the



LIEUTENANT ADOLPHUS W. GREELY.

Polaris in 40 hours. The terrors of the dreaded bay have been much diminished since the use of steam.

On August 4, the vessel was stopped by the ice in the extreme south-western part of Lady Franklin Bay, only eight miles from its destination. The pack was an exceedingly heavy one. The *Proteus* was made fast to its southern edge to await further movements of the ice.

On the 8th a nip appeared probable, and preparations were made for it, and the screw and rudder were made ready to be unshipped instantly. The condition of the ice improved, however, at the turn of the tide.

A south-westerly gale with snow set in on the 10th, and continued during the 11th, starting the whole pack to the northward. When the snow cleared, open water was visible along the west coast as far northward as the eye could reach. Lady Franklin Bay was easily crossed. Water-course Bay was entirely filled with pack-ice, jammed against the shore, which extended to the southward, but a narrow lane of water between Distant Cape and Bellot Island permitted the vessel to enter Discovery Harbor, where she was moored to the ice inside Dutch Island. Fast harbor-ice about 18 inches thick covered Discovery Harbor, as well as the western half of Lady Franklin Bay.

On August 12 *Proteus* broke her way through nearly two miles of heavy ice and anchored on the holding-ground of the *Discovery*. The general cargo was discharged, and the station named Conger. The entire harbor was frozen over by September 1. A boat and sledge evidently abandoned by the *Discovery* were picked up. Sledge parties were formed for hunting and exploration.

The sun left on October 14, not to appear again till

February (137 days). The party were in excellent spirits, and full of hope and confidence for the spring work. On November 3, they settled down to winter quiet.

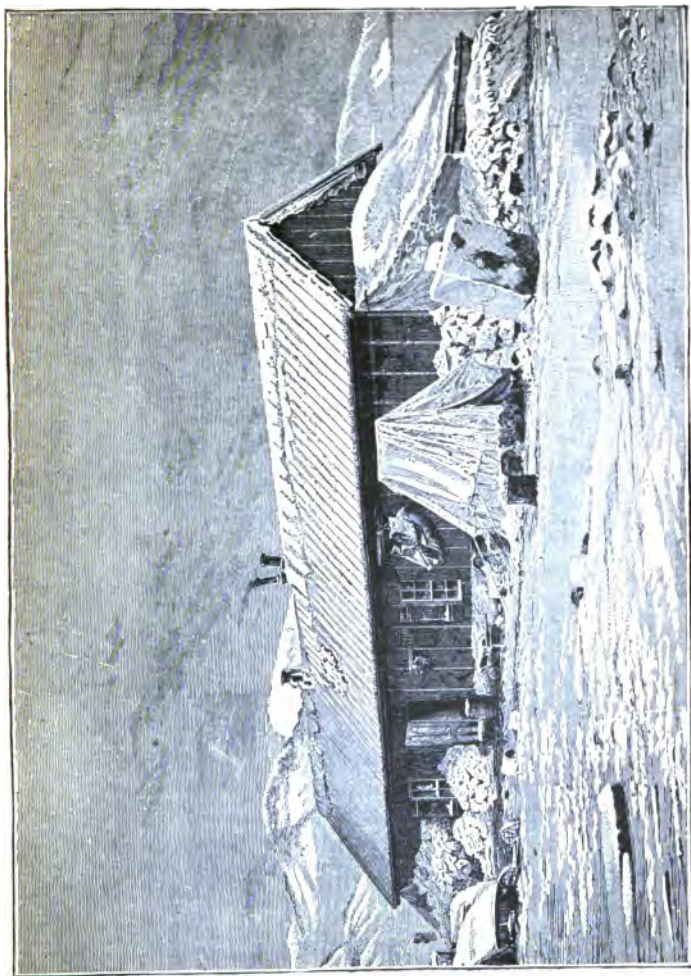
February, 1882, opened up with very cold weather. With the sun's reappearance on the 28th all thoughts were directed toward spring traveling. Lieutenant Lockwood left, March 1, for Thank God Harbor, to ascertain what serviceable provisions could be drawn from that point for the North Greenland sledge party. The Observatory building was found yet standing, and the stores fairly protected from weather and animals. The grave of Captain Hall was visited, and found in good condition. The records of the English expedition of 1895 were found. Lockwood pushed on to Newman's Bay, and near Cape Sumner found the whaleboat that had been left by the *Polaris*. He was ten days on this trip; the temperature averaged 40°, and the weather was favorable.

Greely was satisfied that the interior of Grinnell Land could be explored successfully, and on April 26 he set out to make the attempt. He was gone 12 days, traversing over 240 miles. His route was over the south-west part of Discovery Harbor, Sun and Connybeare Bays. In his field-journal he writes:

"Conybeare Bay does not terminate ten miles inward, as was supposed, but proves to be a fiord. Extending from Stony Cape to the south-west, Chandler Fiord, as I called it, terminates in that direction, about thirty miles inland, by a bay (Ida Bay), about four by six miles in extent. Near Ida Bay, the fiord proper turns sharply to the north-north-west and continues about 12 miles farther."

At the end of Chandler Fiord was found what at first sight appeared to be a glacier—an almost vertical wall of ice, 15 feet high and about a mile wide. It proved to be an ice-dam of a river, from which fresh water oozed in small quantities. The river's tortuous course was in general first north and then west-north-west. Its source is in a lake (Lake Hazen) of remarkable extent. The junction of Lake Hazen and the river was in latitude $81^{\circ} 46.5' N.$, longitude $70^{\circ} 30' W.$ Five miles before reaching Lake Hazen, we found the river open. The appearance in April at this latitude of a clear-running stream made a marked impression on us, which was not diminished by a bird of an unknown kind suddenly flying by. The open river was about 40 yards wide and two feet deep, with ice-walls about ten feet thick, which, gradually decreasing in thickness, totally disappeared at the edge of the lake, into which open water extended about a quarter of a mile. It was evident that the stream flows the entire year, and that at its source it rarely, if ever, freezes. Thin ice, along the borders of the junction, shows that in extremely cold weather a thin coating of ice forms, which much very soon be destroyed by the current.

Lake Hazen was estimated to be nearly 60 miles long and six miles wide. Its southern shores are bounded by ranges of low hills, not entirely snow-clad, which extend far to the southward, with no prominent peak visible. Parallel with the northern shore extends a range of mountains, partly snow-clad, which were called the Garfield Range. Through the valleys of this range could be seen occasional peaks of those mountains—covered with eternal snow—which I have called the United States Mountains, retaining the



GREELY'S HOUSE AT CONGER, 1882.

nomenclature, although their location has been radically changed from that originally given them. The surface of the lake was covered with snow about two feet deep.

Following the shore-line about 18 miles to the southwest, we visited a large glacier (Henrietta Nesmith Glacier), which was found to discharge into a small bay, some four miles deep, and to have a convex-shaped front of three miles' extent. The upright front, which had appeared to be of insignificant size, towered up and proved to be nearly 175 feet in height. It was lowest where one of five surface-discharge brooks had worn it down, in the very center. Its extent inward could not then be determined, as no view reaching more than three or four miles' distance could be obtained.

Knowing that our rations could not carry us farther, and fearing the entire breaking up of the river, we returned to Fort Conger, caching our surplus stores at the river, for the use of a future party.

The ice traveled over was in many places remarkable. For some eight miles in Chandler's Fiord, and for 20 miles on the river, it was so free from snow and so smooth that the sledge and load could have been drawn by a child.

This sledge journey was an exceedingly fruitful one in its results. It disclosed physical conditions in the interior of Grinnell Land hitherto unsuspected. The absence of discharging glaciers which had excited remark on account of the extreme latitude, was now explained by the discovery of a broken, rugged country, intersected by a system of fiords and lakes which readily drains, during the short Arctic summer, the inconsiderable snow-fall. The valleys, bare of snow, give

birth to vegetation, luxuriant for the latitude, which serves as pasturage for considerable game. The presence of the glaciers, bursting through the Garfield Range, proved the existence of an ice-cap on the northern part of Grinnell Land, and inferentially a radically different topography from the country in the vicinity of Discovery Harbor and Lake Hazen.

While these journeys were being made, Lockwood was exploring the North Greenland coast. The party proceeded to Cape Sumner, and the Discovery Boat Camp, encountering violent storms, and on April 16 started from the latter place for the north with 300 rations. The journey was painfully laborious; the men complained of sleeping cold, the sleeping bags being frozen stiff. At Heaton Gorge, on April 26, they found the depot left by the English explorer Beaumont, and next day reached Cape Bryant. Here Cape Britannia was clearly visible, and here the supporting party terminated their journey. On the 29th, Lockwood, accompanied by Brainard and Christiansen, turned his face northward over the frozen sea. He traveled direct for Cape Britannia, which he reached on May 3, while on May 7 they were at Lew Point, in latitude equal to that of the most northerly land ever before reached; and on the 11th they encamped on Mary Murray Island, where a gale delayed them for 63 hours.

On May 14, Lockwood ascended the cliffs overshadowing his camp. There the national ensign was given to the breeze in *the highest latitude ever reached by man*, and on land farther north than any which had ever before met his vision. For the first time in 275 years another nation than England claimed the

honors of the farthest north, and the Union Jack gave way to the Stars and Stripes.

For three centuries England had held the honors of the farthest north. The latitude of Hudson, $80^{\circ} 23'$, in 1607, gave way to Phipps, who reached $80^{\circ} 48'$ N. in 1773. Scoresby, the elder, in 1806, reached $81^{\circ} 12' 42''$ N.; and 21 years later came Parry's memorable journey, when he reached $82^{\circ} 45'$. These latitudes were all attained in the Greenland Sea. Inglefield opened to the world the Smith Sound route, and in 1871, Meyer reached $82^{\circ} 09'$, the highest on land, and Payer, a year later, almost equaled Meyer by his sledge journey to Cape Fligely ($82^{\circ} 07'$), Franz Josef Land. In 1876 Aldrich surpassed Parry's famous latitude, and reached Cape Columbia, $83^{\circ} 07'$ N., only to be surpassed on sea a few weeks later, by Markham, $83^{\circ} 20' 26''$ N., during that journey over the Great Frozen Sea in which such energy, persistency and courage were exhibited by the officers and men of the English Navy.

Now Lockwood, profiting by these labors and experiences, surpassed the efforts of three centuries by land and ocean. And with Lockwood's name should be associated that of his inseparable sledge-companion, Brainard, without whose efficient aid and restless energy, as Lockwood said, the work could not have been accomplished.

So, with proper pride, they looked that day from their vantage ground of the farthest north (Lockwood Island) to the desolate cape which, until surpassed in coming ages, may well bear the grand name of "Washington."

Greely left Fort Conger on June 24 with four companions, and set out for Grinnell Land. On July 4, they



FASTENING TO A BERG.

ascended a high mountain a few miles to the south-east. This is 50 feet above the highest peak of the Victoria Range ascended by Lockwood, and was named Mount Arthur. He was now in the west of Grinnell Land, and thus writes in his journal:

"The whole country seems spread out before me. A second chain of mountains (Conger) extend to the westward as the prolongation of the Garfield Range. They are separated by a break of eight or ten miles from Mount Whisler, which is the most westerly of the Garfield chain. Northward of the Conger and Garfield ranges are a mass of hog-back mountains, all entirely snow-clad, which we include in the United States Mountains. The valley northward of Mount Whisler extends to the eastward about half-way to the Nesmith Glacier, and from that point to the eastward the rest of the Garfield Range is crowded closely against the United States Mountains, evidently being the only obstacle which prevents the glacial ice-cap from overflowing the country to the southward. The overlapping, rounded tops of ice-clad mountains can be distinguished for at least 20 miles to the north-eastward beyond Nesmith Glacier, which must be nearly 40 miles distant itself."

To the westward, the valley between the Conger and United States Mountains opens out or widens in that direction. The mountains themselves, after extending a great distance, trend gradually to the north-westward, probably terminating in the Challenger Range of Aldrich.

The north and south ends of the range were cut off from view by the hills, but it cannot in any way be joined to the Conger Range. Again, due southward was seen, about 40 miles distant, a prominent mountain rising sharply on its eastern point and showing a flat

top, which extended westward and gradually (perhaps from perspective) merged into the low hill.

In the south-east there was a prominent peak, with a few illy-defined snow-clad mountains, evidently the western slope of the Victoria and Albert Range.

The important results of the journey was the discovery of the existence of an interior lake of such dimensions as Lake Hazen (which covers probably 300 square miles), which shows with what rapidity the numerous ravines must drain the country, and explains why the entire country is not ice-capped. Glaciers were seen only where the Garfield Range pressed closely against the United States Mountains, evidently offshoots of the enormous ice-cap which covers the northern mountains.

The party returned to Fort Conger with nothing more than the usual difficulties. The ice had now broken up and boats were launched, and one of them went off to Cape Lieber in the hope of seeing the relief-steamer. No trace of her could be seen, and on August 28, all hopes were given up. Lockwood proceeded with the launch to the head of Archer Fiord for exploration, leaving the whale-boat at Lieber. The party was very successful in obtaining game during August.

On September 1, 1882, they arranged for a *second* winter. Lockwood was sent, on the 24th, up Black Rock Vale with a dog sledge, to ascertain whether travel was possible inland. The trip showed the impracticability of sledging to Lake Hazen overland.

On September 16 the sun left. Auroras were frequent. Frozen mercury was noted on November 9, as against the 14th in 1881. The Aurora was noted daily in December till the 17th.

March, 1883, brought a sense of relief that the second winter had ended, and the entire party was in strength and health.

Lockwood desired to further explore the north coast, but Greely sent him southward into Archer Fiord, to attempt the crossing of Grinnell Land to the western ocean. He started April 24, with two teams and ten dogs. He returned on May 26, being 31 days absent. His journey had been remarkably successful. Greely says of it: "He explored the valley at the head of Ella Bay, and finding no practical route in that direction, proceeded to Beatrix Bay, and from that point succeeded in crossing Grinnell Land, reaching the salt water from the Polar Ocean at the head of a fiord named by him Greely Fiord. He traveled down the fiord some 25 miles and reached a point in $80^{\circ} 48' N.$, $77^{\circ} W.$ After waiting three days on less than half-rations for fair weather, he noted on a clear day the apparent termination of Grinnell Land, on the north side of Greely Fiord, in Cape Brainard. To the southwest, at a distance of some 70 miles, a projecting point of high land could be seen, which apparently was separated by a wide fiord from the southern point of Grinnell Land. It seemed proper to me to name this point Cape Lockwood, in honor of its discoverer, and to designate the new land as Arthur Land, in honor of the President. Lockwood discovered that the southern half of Grinnell Land is covered by an immense ice-cap, which extends from the head of Ella Bay to the southern shores of Greely Fiord. A marked peculiarity of this ice-cap was its unbroken and perpendicular front, which ranged from 125 to 200 feet in height. Such was its abrupt character that but two places, in a fifty-

mile journey along its front, were observed where it would have been possible to scale it.

"During this journey Lockwood and Brainard dis-



GLACIER "FLOEBERG," HEAD OF GREELY FIORD, ANTOINETTE BAY.

played great energy, endurance, loyalty, and pluck. For nearly a week the entire party lived on less than half-rations in order to complete their work of exploration and discovery."

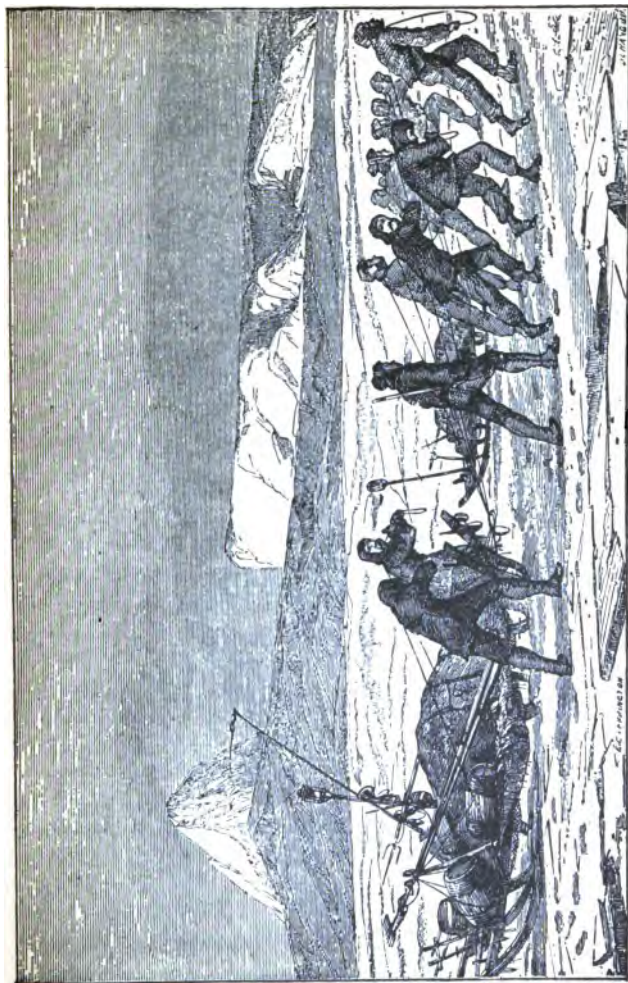
May 30 was considered a holiday, and in honor of our Decoration Day the head-boards of the Arctic dead of the British Expedition of 1875 were decorated.

July ended in southerly gales that did much to break up the harbor ice in Hall Basin and Robeson Channel; but the ice in Archer Fiord remained fast, and no possible chance of crossing it appeared. Preparations had been made to abandon the station at the earliest moment.

The condition of the party for the coming retreat was one of general health and strength, despite their arduous labors for two years amid unequaled cold and darkness. Of the 721 days spent at Fort Conger, 268 had been sunless. On 262 days, one or more sledge parties had been absent in the field, on journeys entailing from two to sixty days' absence, and some 3000 miles had been traveled by such parties; an unequaled latitude to the north had been attained; to Greenland over 100 miles of new coast had been added; and to the westward Grinnell Land had been crossed, its exterior surveyed, its physical geography determined, and the contours of its northern half fixed with considerable certainty.

They left Cape Hawks on August 27, finding the old ice increasing in amount and in places cemented thickly together with young ice. Greely's judgment of the situation is thus expressed in his journal:

" * * * We are now in a critical situation, not knowing what can be depended on. Since no vessel reached this point in 1882-'83 (to this time), we must all feel an uncertainty as to the party for our relief being at Life Boat Cove. The ice to the southward is now in such a state that any well-provided vessel could easily run through it. If no party is at Life Boat Cove, our



SLEDGE EXCURSIONS OVER THE ICE.

situation is exceedingly dangerous. We have, perhaps, sixty days' provisions, and beyond that we must depend on the resources of the country, which are of the most precarious character. However, we shall do our utmost, and by some possible chance we may reach Cary Islands."

It was decided that September 10 was the latest limit to await the action of the spring tides and heavy winds to break up the floes. They were then to start, by sledge, for Cocked Hat Island, and thence press on to Cape Sabine. All the boats but one were to be abandoned, it being the general belief that a second boat could not be hauled. September 10 broke with a severe snow storm that delayed the moving till the afternoon. The party started with three sledges, the first, the twelve-man sledge, dragged by Greely and thirteen others; Lieutenant Kislingbury with five men dragged the six-man sledge; Sergeant Jewell and three others the four-man sledge. Both of the small sledges broke down the first day, and the four-man sledge was abandoned. The other was repaired and used.

At starting, the estimated distance of Cocked Hat Island was eleven miles. On the first day they made one mile of that distance, which involved nine hours' traveling, or almost 14 hours from breaking to completing camp. On the 11th they were forced to abandon the whale-boat.

September 19 was a critical day for the party. A south-west gale commenced shortly after midnight, and was so violent during the day that pemmican and water was served to the men in their bags for breakfast and supper, no cooking being possible. Bearings indicated that they were again in the middle of Kane Sea in 78°

52', about 14 miles east of Cape Sabine. The land, which the night before had been in easy reach, was now 20 miles distant. All believed there was a chance of reaching the west coast, if they drifted by Cape Sabine.

Lockwood decided they had only three chances for their lives: I. Of finding an American *cache* at Cape Sabine; II. Of crossing the straits, here 35 miles wide, when their provisions were gone; III. Of being able to kill enough game for their support during the winter. Another effort was made by a party to reach Cape Sabine, which succeeded. They brought news of the loss of the *Proteus*, and that Garlington had gone south in hopes of meeting the *Yantic* or some steamer. The record left by this relief party decided Greely to proceed to Cape Sabine and await the promised help.

On October 26 the sun once more sank below the horizon, and the long Arctic night began. Rations were reduced to one-third of what was necessary, the blubber would supply but one poor light; cold, dampness, darkness, and hunger were the portion of all, every day and all day. Hunger affected all of them most severely. Lockwood writes: "Occupied, like a dog, in scraping the place



LIEUTENANT LOCKWOOD.

where the mouldy biscuits were emptied. Found a few crumbs, ate mould and all." An expedition went to Cape Isabella to bring in 140 pounds of meat left by English explorers, but nearly ended in the death of the party, who were rescued by Lockwood, after what Greely calls "the most remarkable journey in the annals of Arctic sledging." From now on the record is one of horror and misery. Half of the party were unfit for duty; thefts were detected; accusations of unfairness in dividing the rations were made, yet when Christmas Day came round they celebrated with songs and good wishes. Lockwood seemed out of his head, Cross showed scurvy symptoms, and died January 18; this was the first death from starvation. Some of the party were insubordinate. During all this time of agony, Greely and others endeavored to beguile the dreary time by talks on the history of their country, and their adventures abroad. On February 1, Rice was sent to cross Smith Sound to Littleton Island, where they hoped the rescuing party was, but they returned unsuccessful on the 6th. Demoralization now set in. In March, Greely writes: "The fates seem against us—an open channel, no game, no food, no hopes from Littleton Island. To die is easy; it is only hard to strive, to endure, to live." On March 21 he exhorts his comrades to die like men. On the 26th a ray of sunlight disclosed such a scene of utter squalor and misery that Greely exclaimed, "How have we ever passed through this hell on earth and kept our reason?" In April the end was evidently approaching. On the 5th one of the Esquimaux died; on the 6th Linn died; on the 7th Rice died; and on the 9th Lieutenant Lockwood passed away; on the 12th another

death ; and the second Esquimau died on the 29th. On the 14th Kislingbury exhibited signs of mental derangement ; Greely himself was ill. In May a mutiny seemed imminent, and on May 22, it is recorded, "It is now eight days since the last regular food was issued." All discipline was now at an end. Kislingbury died June 1 and on the 6th Private Henry was executed for continued thefts. On the same day Bender and Dr. Pavy died, then Gardiner died ; and the last entry in Greely's diary is : " 21st—It commenced snowing. Connell's legs paralyzed from knee down. Brederdick suffering terribly from rheumatism. Buchanan Strait open this noon a long way up the coast."

On the 22d they were all exhausted, but about midnight the sound of a steam-whistle was heard. The whistle was blown by the *Thetis*, a vessel sent out to search for the long-lost party.

According to the original plan drawn up when the Greely expedition set out on the *Proteus* in 1881, a ship, the *Neptune*, was despatched in the following year, but was unable to reach Fort Conger, and returned without leaving any stores for the Greely party. In 1883 the *Proteus* and the *Yantic* both failed to leave provisions, although they reached a point beyond that where Greely's men were left to perish. The terrible position in which this failure left the isolated band appalled all thinking men, and in the spring of 1884 a safe fleet of vessels was sent out. The Government bought two Scotch whalers, the *Bear* and the *Thetis*, and the Queen refitted, and tendered as a gift to the United States, the *Alert*, the old flag-ship of Captain Nares in 1874, and the strongest wooden ship afloat.

The command of this rescuing fleet was given to Commander Schley, and Melville, of the *Jeannette's* crew, under the hapless De Long, accompanied the expedition as engineer of the *Thetis*. This ship sailed from New York on May 1, and proceeded with all speed to the Northern seas. It was a race between the Government ships and the whalers, for Congress had offered a prize of \$25,000 to any vessel that succeeded in rescuing the explorers. The *Thetis* beat the others in the race and arrived at Cape York on June 18. At Brevoort Island a landing party discovered some records left by the Greely party dated September 22, 1883, stating that they had gone into camp near Camp Sabine, "25 men, all well." A party was despatched thence and by this time the screeching of the steam-whistles had roused the unfortunates, and Brainard, Frederick, and Long, the strongest among them, tottered down to the rocky promontory to look for relief. But they saw nothing and returned filled with despair, but Long returned to the rock to take another look and his eyes were gladdened by the sight of the steam-cutter. He tried to raise a signal of distress, but was too weak, but the men on the cutter had seen him, and ran inshore, while Long rolled and scrambled towards them, clamoring for food. He told them his comrades were over the hill, and that only seven survived, among them Greely. The ice-pilot, Norman, leaped ashore and rushed up the hill to the tent.

"Greely, are you there? How do you get in?"

"Is that you, Mr. Norman?" replied Greely.

"Yes, it is, you are all right now; succor has come."

Forty-eight hours more would have sealed the fate of all. Greely could not stand, and could scarcely

speaking. "Here we are," he said faintly, "dying—like men. Did what I came to do—beat the best record."

The scene that presented itself was indescribable. A cold, barren plateau, a black rock where even mosses could not grow, drifts of snow in the ravines, and a raging wind and pitiless sea, not a living thing in sight except the skeleton-like survivors. We quote Melville's description :

"Struggling up the valley of death against the frantic wind, from the low point to the westward of the camp, where we managed with difficulty to effect a landing in our whale-boats, we first came upon the remains of the winter habitation.

"The hut had been roofed over with the whale-boats turned upsidedown and covered with the sails and tent-cloths; the smoke-flue, made of old tin kettles bound with bits of canvas, was thrown to one side; and water had risen in and about the wretched dwelling-place to a height of eight inches, concealing much of the foul evidences of squalid misery in which its poor occupants had lived. Cast-off fur and cloth clothing, empty tin cans, and the sickening filth of twenty-five men for nine months, lay heaped and scattered about—a veritable Augean scene. Continuing up the valley toward a little rise of ground, we passed the dead body of a man laid out on a projecting plane of rock. A woolen cap was pulled down over his face, his hands were crossed on his breast, and his clothing and blankets were fastened around him with old straps and shreds of rope or yarns. Farther up the hill lay the summer camp or tent, black with smoke and partly blown down, the flaps flying in the wind, which was blowing loose papers, leaves of books, and old clothing hither and


thither; and on their backs within this half-open inclosure lay the poor creatures whom we had come to rescue, now more dead than alive.

"Greely, in his sleeping-bag, and resting on his hands and knees, was peering out through the open doorway; his hair and beard black, long and matted, his hands and face begrimed with the soot of months, and his eyes glittering with an intense excitement. For what terrible days of agony had been swept into oblivion by this supreme moment of joy. Succor had come at last! And yet he scarcely seemed to realize it. Mr. Norman told him who I was and he said he was glad to see one of the people of the *Jeannette*, for he had learned a great deal of the history of our expedition from scraps of newspapers that had been wrapped around some lemons left by the Garlington party. Alongside of him lay a man on his back, Sergeant Ellison, to whom he introduced me, and who said he would like to shake hands with me, but his hands and feet were both frozen off. I looked down and saw that his nose was likewise gone. Yet he seemed cheerful and bright, and coolly discussed his sorrowful plight, thrusting one of his arm stumps, which I shook in lieu of a hand. Higher up and beyond the tent was the burial-ground, where ten bodies lay in a row, some barely covered with loose earth and stones. The first grave had been very carefully made, for it was that of Sergeant Cross, the first man to die, and the survivors were then still strong enough to endure exertion. The subsequent graves became more and more shallow, just as the strength of the party was waning. All the faces were covered with woolen hoods and cloths or handkerchiefs; and each body was stretched out on its back with the hands

crossed on the breast and the clothing bound round. Only one corpse was found unburied, that of Private Henry; but the six that had been interred in the ice-foot, were, of course, beyond recovery.

"In the camp all was bustle and confusion. One man, Connell, was to all appearance lifeless; his face was fixed in death; he was cold from the hips down; and he scarcely breathed. Three days before he had eaten his last ration of seal-skin, and, abandoning all hope, had calmly determined to die. Doctors Green and Ames had their hands full of work. Water-kettles were heated, and the clothes being stripped from the half-dead Connell, he was wrapped in a blanket dipped in hot water. A little brandy was then poured down his throat, but it ran out at the side of his mouth until, catching his breath, he drew in sufficient to choke him and blew out the rest. Yet the few drops he retained sufficed to revive him, and rolling his head to one side he said wearily, 'Let me die in peace.' Not realizing that succor had arrived, he thought his comrades were still laboring with him. However, he survived and still lives. He was a vivacious sort of man, and when on board the *Thetis* a few days remarked, 'Well, boys, it was a pretty close squeeze for me. Death had me by the heels, and you pulled me out by the back of the neck.'

"Stretchers were brought from the ship, and the survivors carried to the steam-cutter and then transferred to the *Thetis*, all save Frederick and Long, who, as hunters for the party, had been allowed additional rations from the game procured, to maintain their strength for the extra exertion demanded of them. The camp was devoid of all food except a few pounds of boiled seal-



skin strips, contained in tin cans. The final division of this food had been made some days before, and each man had charge of his own meagre supply.

"The faces of two of the men were so swollen that they could scarcely see, and the rheum and slime had gathered in their eyes and half-blinded them. They were too weak to help themselves, and dipping an old woolen sack in warm water, I cleansed the eyes of one who lay upon his back gazing dimly in the direction where our mastheads could be seen across the rocks.

"Commander Schley stood by and said:

"My man, don't you see the ship's masts? Don't you see the flags?' for we had mastheaded our colors.

"Please lift me up a little,' he urged, huskily, 'that I may see.' Then, catching sight of the colors, he cried, 'Hooray! There is the old flag again; now, boys, we'll get some mush.' And he did his best to raise a feeble cheer, while the tears of joy ran down his cheeks as we supported him in his sleeping-bag.

"When I shook poor Ellison by the stump he said:

"So you are one of the officers from the *Jeannette*, and poor De Long is dead. You must have had a terrible time.'

"Here was sympathy sure enough. A man with nose, feet, and hands frozen off, who for months had been helplessly stretched upon his back, enduring every agony and horror but death itself, could nevertheless find room in his bleeding heart to pity the past sufferings of others. A noble nature, indeed. He it was who sacrificed himself on the expedition to Cape Isabella for the English beef, when Sergeant Rice perished.

"It was after midnight of June 22 before we finished our sad duty of removing all the dead and living, to-

gether with the books and papers and certain relics, from Camp Clay to our two vessels ; and we then sought shelter from the gale under the lee of Brevoort Island. The next morning saw both ships moored together at Payer Harbor ; but when the fury of the wind had abated, Captain Schley sent back in the *Bear* a party of officers and men selected from both companies to go over the ground more carefully at Camp Clay, and gather up all overlooked articles that might be of value either as mementoes or a part of the history of the expedition."

The bodies of the dead were transferred to the *Thetis*, and a piece of numbered canvas sewn on each. She then proceeded on her voyage homeward, and reached Portsmouth, N. H., July 26, where the cruise of the rescue ships virtually ended.

Commander Greely, in his report to the Government, thus expresses himself: "I should be unjust to the dead did I not call attention to their arduous labors, heroic endurance, and unflinching determination, which advanced the national ensign to an unparelled latitude, carried out the programme of international scientific observations, increased perhaps in an unequalled degree in this century our knowledge of the physical characteristics and configurations of Polar lands ; and who, more than all, in perhaps the most successful Arctic boat journey of the age, brought safely, at the price of great bodily suffering and diminished chances of life, through a dense Polar pack, their records to a point whence they would eventually reach the world. They died for that end, and should not be forgotten."

CHAPTER XII.

PEARY'S JOURNEY ACROSS GREENLAND.

So many expeditions having failed in their efforts to effect a North-west or North-east Passage from ocean to ocean within the Arctic Circle, more apparently practical methods have recently been adopted. The attention of the latest explorers has been turned to Greenland with the resolve to explore it thoroughly with the view of making it the base of operations for the Pole.

On June 6, 1891, the steam-whaler *Kite*, which was engaged to lead the the expedition of the Philadelphia Academy of Science northward, sailed from New York, her destination being Whale Sound, on the north-west coast of Greenland, where it was the intention to pass the winter preliminary to the long traverse of the inland ice, which was to solve the extension of Greenland in the direction of the Pole.

The expedition numbered five only beside Commander Robert E. Peary, of the U. S. Navy, and his wife, who wished to share the fatigue and hardships of the work. Sixteen months after their departure they returned home.

Peary says, "Within 60 miles of where Kane and his little party endured such untold sufferings, within 80 miles of where Greely's men one by one starved to death, and within less than 50 miles of where Hayes and his party, and one portion of the *Polaris* party, underwent their trials and tribulations, Mrs. Peary lived for a year in safety and comparative comfort." She returned with a child born close to the Pole.



ROBERT E. PEARY.

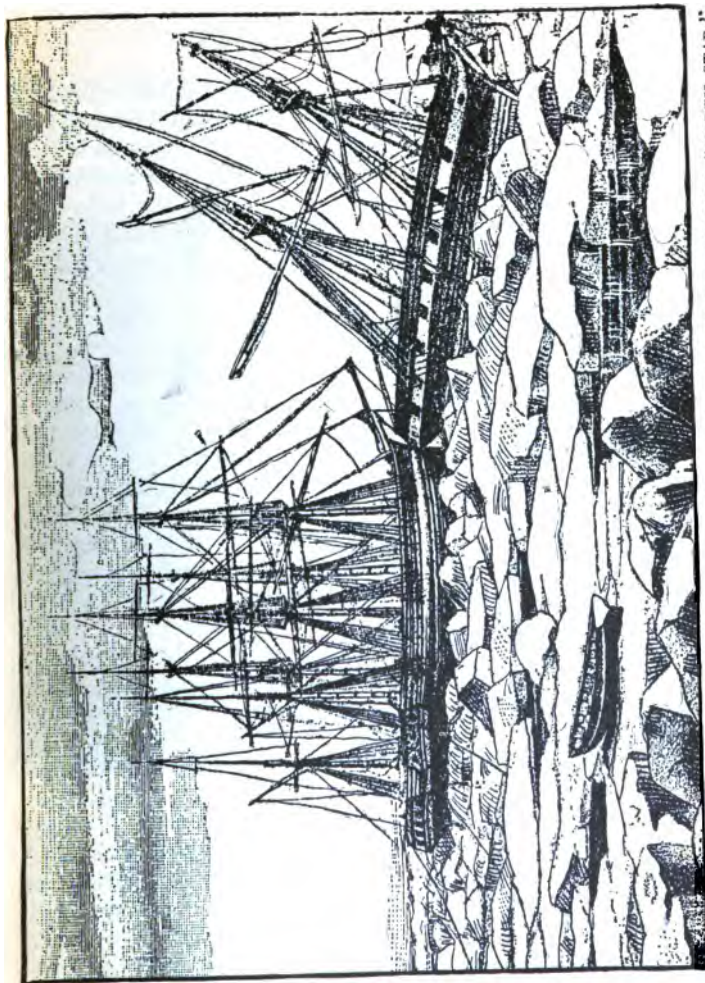
Peary traversed Greenland from coast to coast, and added a remarkable chapter to the history of Arctic exploration.

Upernavik, the most northerly of the Danish settlements, and the outpost of civilization, was reached on



UPERNAVIK.

July 2. They headed for Melville Bay, where for three weeks they were ice-bound in the much-dreaded Melville Bay Pack. On the 15th, Peary had his leg broken by the wheel, which was wrenched from the helmsman's grasp. A light nip was experienced on the 15th, but they blasted their way out with gunpowder. On the



WRECK OF THE AMERICAN WHALER "MCLELLAN," ON THE BOWS OF THE ENGLISH "NORTH STAR,"
IN MELVILLE BAY.

24th, McCormick Bay was reached, and winter-quarters established. On the 30th the *Kite* turned homewards.

By October 6, the winter began and McCormick Bay was frozen over so as to support the dogs and sleds. On the 26th the sun disappeared to return the following February. The winter was passed in the usual Arctic fashion. April 18, 1892, sledge journeys were started for exploration into Inglefield Gulf.

Mrs. Peary, in her "My Arctic Journal," writes: "The glacier, which forms much of the eastern wall of Inglefield Gulf, has a frontage of 10 miles, and is the largest of the series of giant glaciers in which are here concentrated the energies of the ice-cap. North of it lie the Smithson Mountains, and farther beyond a vast congeries of ice-streams which circle westward and define the northern head of the gulf. To the eastern sheet, upon whose bosom no human being had ever stepped and on whose grandeur no white person had ever gazed, we gave the name of Heilprin Glacier."

The real start of the overland ice-journey was made on April 30. The last of May found them looking down into the basin of the Petermann Glacier, "the grandest amphitheatre of snow and rugged ice that human eye has ever seen." Keeping northward, they were befogged, and approaching too near the mountains of the coast, got entangled in the rough ice and crevasses of the Sherard Osborne Glacier system. They lost 14 days in getting back to the smooth, unbroken snow-cap of the interior. Turning eastward they traveled for 57 days over a barren waste of snow till they stepped upon the rocks of a strange, new land. Four days of the hardest traveling over sharp stones of all sizes, through drifts of snow and across rushing

torrents, brought them to a summit of a towering cliff, about 3500 feet high, now known as Navy Cliff, from which was overlooked the great and hitherto undiscovered Independence Bay (which was so named in



WALRUS.

honor of the day, July 4), and were standing on the northern shore of Greenland.

They remained here several days, more than 600 miles of pathless ice separating them from the nearest human being, and then began their return march. The snow was soft and light, and without their "ski," or Nor-

wegian snow-skates, they would have been helpless in it, but after passing the Humboldt Glacier the traveling became better. The down-grade assisted them and they averaged 30 miles daily. On August 6, they met Professor Heilprin of the Peary Relief Expedition, and in the ship lying at anchor at the head of the bay Peary found his wife, who had been waiting 63 days for his return. On the 14th they rounded Cape Cleveland, the wind blowing a gale, and on the 24th, were back again in Philadelphia.

The main results of the journey were : The determination of the rapid convergance of the shores of Greenland above the 78th parallel of latitude, and consequently the practical demonstration of the insularity of the great land-masses (setting at rest the question that had disturbed the minds of geographers for over three centuries); the discovery of the existence of ice-free land-masses to the northward of Greenland; and the delineation of the northward extension of the great Greenland ice-cap.

On July 8, 1893, Peary made a second journey from Portland to St. John's, and following the coast of Labrador for ten days he headed across Davis's Strait for Holsteinborg and thence to Upernavik, where some dogs were picked up, and so on to Tassinsak, the most northerly inhabited spot in the world belonging to any Government. From here they headed for Melville Bay, which was crossed in 25 hours (the previous best record being 36 hours). They were three weeks in crossing on the earlier visit. They pushed along the coast till Cape Parry was rounded, and steamed into Bowdoin Bay.

He started for Smith's Sound on August 12, where

24 walrus were captured. Rounding Cape Alexander they steamed half-way across the sound toward Cape Sabine, where they were stopped by the ice-pack, which stretched in an unbroken plain as far as could be seen. Turning back, Polaris House was visited, and some souvenirs found.

Henry G. Bryant, and a party called the Peary Auxiliary Expedition, sailed from St. John's in the steamer *Falcon*. On account of the heavy ice, Bowdoin Bay was reached only after great difficulty, where the members of Peary's party were all found alive and well. Peary's attempt to reach Independence Bay, on March 6, 1894, by way of the inland ice-cap, failed owing to furious storms which prevailed. The party suffered great hardships. Some were frost-bitten severely, and were laid up for several months in consequence. When the *Falcon* was ready to sail homeward, Peary decided to remain and make an attempt to reach Independence Bay in 1895. Matthew Henson, his colored servant, and Hugh Lee elected to remain with him. Mrs. Peary, with her baby, and the remainder of Peary's companions, came home in the ship.

In September, 1895, Peary and his two companions came home. This energetic and tenacious explorer failed to accomplish the chief object of his journey, the exploration of lands to the north of Independence Bay, but he succeeded in making an accurate survey of Inglefield Gulf, besides numerous other valuable additions to the world's geographical knowledge.

CHAPTER XIII.

NANSEN'S VOYAGES.

NORDENSKIÖLD's success made it evident that Greenland could be crossed, and was the forerunner of Nansen's crossing to the South, and Peary's crossing to the North. The first crossing of Greenland was made over the inland ice by Fridtjof Nansen, who started from Christiania in May, 1888, on his celebrated journey to Greenland, in which he crossed the continent, returning to Norway in May, 1889.

Nansen, after his return from his explorations in Greenland, suggested his scheme for reaching the Pole, which met favor with his countrymen, and resulted in his receiving more than \$85,000 for the purpose, some of which was given him by public grant, and some by King Oscar of Sweden and Norway, and other private subscribers. In 1891 he published an article in the *Forum* in regard to his plan for reaching the Pole, which was the first authoritative account of his daring adventure. In this article, Nansen said:

"It will be no holiday trip, the drift through regions where the days last six months, and the nights are no shorter; but it is not to seek pleasure that we go out. People, perhaps, still exist who believe that it is of no importance to explore the unknown Polar regions. This, of course, shows ignorance. It is hardly necessary to mention here of what scientific importance it is that these regions should be thoroughly explored. The history of the human race is a continual struggle from darkness towards light. It is, therefore, to no purpose to discuss the use of knowledge; man

wants to know, and when he ceases to do so, he is no longer man."

In the autumn of 1892, Nansen undertook a lecture tour in England in order to raise money for his coming expedition to the Polar regions. At a meeting of the Geographical Society in London, he gave a full account of his hopes and prospects.

He said on this occasion that he believed that if we took careful notice of the forces which Nature herself placed at our disposal and endeavor to work with them, and not against them, we would find, if not the shortest, at all events the most certain route to the North Pole in the ocean current running north from Siberia and south by Greenland. Among many other evidences of a current running across the Pole, Nansen said there was the drift of the wrecked *Jeannette*, and there was the fact that a number



FRIDTJOF NANSEN.

of objects belonging to her crew were found on an ice-floe near Julianshaab, on the south-west coast of Greenland, just three years after she sank. These objects must have been left on the floe either near the place where the ship sank or somewhere on the route of her crew towards the Lena delta.

From all the facts we are fully justified in drawing the

conclusion, said he, that a current is constantly running across the Polar region to the north of Franz Josef Land from the sea north of Siberia and Behring Strait, and into the sea between Spitzbergen and Greenland. The floe ice was constantly traveling with this current in a fixed route between these seas. As this was the case, the most natural way of crossing the unknown region must be to take a ticket with this ice and enter the current on the side where it ran northward—that was somewhere near the New Siberian Islands, and let it carry one straight across those latitudes which it had prevented so many from reaching.

Nansen said there were two methods of trying to obtain the result he longed for—first, to build a ship so constructed that it could withstand the pressure of the ice, and, living in this ship, to float across with the ice; or, second, to take only boats along, encamp on the ice-floe, and live there while floating across. His plan was based on the use of both these methods. He had now built a wooden ship as small and strong as possible; it was just big enough to carry provisions for twelve men for five or six years, beside the necessary fuel; her size was about 600 tons displacement with light cargo. She would have an engine of 160 indicated horse-power, giving her a speed of six knots with a consumption of two and three-quarter tons of coal in 24 hours. With sails alone she would probably attain a speed of eight or nine knots under favorable circumstances. She would consequently be no fast vessel nor a good sailer; but this was of relatively little importance on an expedition like the present, where they would have to depend principally on the speed of the current and the ice movement, and not that of the ship.

A ship's ability to break her way through the pack-ice did not at all depend on her speed, but on her steam power and her shape. For it was naturally the thing of importance to get a strong ship, and the most important feature in her construction was that she should be built on such lines as would give her the greatest power of resistance to the pressure of the ice. Her sides must not be perpendicular, as those of ships generally were, but must slope from the bulwarks to the keel, so that the floes should get no hold of her when they were pressed together, but should glide downwards along her sides and under her, thus tending to lift her out of the water. The vessel ought to be as small as possible, as the lighter she was the more easily she would be lifted by the ice, and the less pressure there would be on her sides. It was also easier to make a small ship strong than a big one. A small ship had other advantages, as it was more convenient to navigate and to handle in the ice, and it was easier to find good and safe places for it between the floes. As great length was a weakness during the pressure and twisting of the pack-ice, the ship ought also to be as short as her necessary bearing capacity would allow.

The result of this in connection with the very sloping sides was that the new ship was disproportionately broad compared with her length. Her breadth was about one-third of the latter. Flat sides were avoided as much as possible near the places that would be most exposed to the attack of the ice, and the hull had a plump and rounded form. There were no sharp, projecting corners; every edge was broken and rounded. Even the keel did not project very much; it was almost covered by the plankings, and only three inches were

visible outside the ice skin, and the sharp edges were quite rounded. On the whole, the ship would, he hoped, leave no place for the ice to catch hold of. Round and slippery like an eel, she would escape its cold and strong grasp. The ship would be pointed at both ends, and, on the whole, resemble very much a Norwegian pilot-boat, or, as he was told, a Scotch buckie-boat, only that she, of course, was carvel-built and that the keel and the sharp bottom were cut off. The bottom was, near the keel, comparatively flat, in order that the ship should have something to rest on without being capsized in case she should be completely lifted onto the ice. Both stem and stern were considerably curved, in order that the ice should get no hold there. The stem was also much sloped, because it would then more easily force the ice-floes under her when she was breaking her way through the ice. The thickness of the sides of the ship was 28 in. to 32 in.—a solid mass of pitch-pine, oak, and greenheart, with a little pitch between. The whole was like one coherent mass, and the ship might almost be considered as if built of solid wood.

She would be rigged as a three-masted fore-and-aft schooner, the sails of which were very easy to handle from the deck. Everything had been done to provide a snug and comfortable saloon and cabins. The principal dimensions of the vessel were as follows: Length of keel, 101 ft.; length at water-line, 113 ft.; length over all, 128 ft.; beam at water-line amidship, excluding the "ice-sheathing," 33 ft.; greatest beam, excluding the "ice-sheathing," 36 ft.; depth moulded, 17 ft.; draught with light cargo, 12 ft. The hull, with boilers filled, weighed about 420 tons. With a displacement of 800

tons, the vessel had consequently a bearing capacity for 380 tons of coal and cargo. Equipment and provisions were not likely to weigh much more than 60 or 70 tons; thus 300 or 320 tons bearing capacity would be left for coal and fuel, and this was enough for about four months' steaming with full speed. Probably, however, they would not be able to make use of the engines more than two months after they had been loaded with coal for the last time. A great quantity would thus be left for heating and cooking during the winters.

For heating purposes they would also carry petroleum, which had the great advantage of giving light besides. There would also be as much electric lighting as possible by means of a dynamo or a walk-mill on deck. For the cooking they would carry alcohol. The vessel was launched at Laurvik on October 26, 1892, and was named the *Fram*, which meant "Forward." She would certainly be the strongest vessel ever used in the Arctic regions. She had been built with great care, and he felt certain that she could be crushed only in a quite extraordinary combination of circumstances. With this vessel and a crew of twelve strong and well-picked men, besides an equipment for five or six years, as good in all respects as modern appliances could afford, he thought the enterprise had a good prospect of success.

It was his intention to start in the spring of 1893. The first goal would be the New Siberian Islands, or the mouth of the Lena River. After some uncertainty, he now thought of going through to the Kara Sea. On reaching the sea north of the Lena delta he should have to wait for the right moment to go northward along the western coasts of the New Siberian Islands,

and try to reach the farthest possible point north in open water. This would probably be in August or early in September. The current caused by the warm water from the Lena River would be a great help to them, as it seemed to be of great influence during the summer, producing an extensive open sea, in which one of the boats from the *Jeannette* was even wrecked.

When they could get no farther, they would have nothing left but to run into the ice at the most favorable spot, and from there trust entirely to the current running across the Polar region. The ice would perhaps soon begin to press, but it would only lift their strong ship. There was a possibility that the ship, in spite of all precautions, might be crushed in the ice; but if this happened, the expedition would have another resource. It would now be time to use the ice as quarters instead of the ship, and they would have to move all their provisions, coal, boats, etc., to an ice-floe, and camp there. For this purpose he had built two big boats, 29 feet long, 9 feet broad, with flat bottoms. They had a deck, and were so big that the whole crew could live in even one of them. Thus the journey could be continued. The only difference would be that they would have two small ships standing on the ice instead of the big one lying between the floes. When they emerged into open water on this side of the Pole there would not be any great difficulty in returning home in the boats; such a thing had been done many times before. It was his conviction that the only difficulty would be to get duly into the current north of Siberia; when this was done they must be carried somewhere northward. Whether they succeeded or not, he felt convinced that this was the way—not a new one—in which the unknown regions

would some day be crossed. It might be possible that the current would not carry them exactly across the Pole, but it could not easily be very far off, and the principal thing was to explore the unknown Polar regions, not to reach exactly that mathematical point in which the axis of our globe has its northern termination.

He sailed, on June 24, 1893, from Christiana for the Kara Sea, after which he hoped to get his vessel packed in the ice and thus drifted across the Polar region by a northwest current, which he believes to exist. Advices show that the first part of his journey was safely accomplished. He expected to be gone three years, and was looked for in the autumn of 1896.

In February, 1896, the following despatch was received from St. Petersburg :

"Dr. Fridtjof Nansen has reached the North Pole! He has found land there and has planted the Norwegian flag at the very axis of the earth! He is now returning to Christiana in his brave ship, the *Fram*, which sailed from that port on June 24, 1893!"

This despatch was discredited by Arctic authorities. Authentic information of the voyage was not received till August 14, 1896, when Nansen and his companion reached Franz Josef Land.

This is Dr. Nansen's story of the voyage of the *Fram*, up to the time he left her :

"The *Fram* left Jugor Strait August 4, 1893. We had to force our way through much ice along the Siberian coast. We discovered an island in the Kara Sea and a great number of islands along the coast to Cape Chelyuskin. In several places we found evidences of a glacial epoch, during which Northern Siberia must have been covered by an inland ice to a great extent.

"On September 15, we were off the mouth of the Olenek river, but we thought it was too late to go in there to fetch our dogs, as we would not risk losing a year. We passed the New Siberian Islands September 22. We made fast to a floe in latitude 78 degrees 50 minutes north and in longitude 133 degrees 37 minutes east. We then allowed the ship to be closed in by the ice.

"As anticipated, we were gradually drifted north and and northwest during the autumn and winter from the constantly exposed and violent ice pressures, but she (the *Fram*) surpassed our expectations, being superior to any strain.

"The temperature fell rapidly, and was constantly low, with little variation, for the whole winter. During weeks the mercury was frozen. The lowest temperature was 62 degrees below zero. Every man on board was in perfect health during the whole voyage.

"The electric light generated by a windmill fulfilled our expectations. The most friendly feeling existed, and time passed pleasantly. Every one made pleasure his duty, and a better lot of men could hardly be found.

"The sea was up to 90 fathoms deep, south of 79 degrees north, where the depth suddenly increased and was from 1600 to 1900 fathoms north of that latitude. This will necessarily upset all previous theories, based on a shallow Polar basin.

"The sea bottom was remarkably devoid of organic matter. During the whole drift I had good opportunities to take a series of scientific observations, meteorological, magnetic, astronomical, and biological, soundings, deep-sea temperatures, examinations for the salinity of the sea water, etc.

"Under the stratum of cold ice water covering the surface of the Polar basin, I soon discovered warmer and more saline water, due to the Gulf Stream, with temperatures from 31 degrees to 33 degrees.

"We saw no land and no open water, except narrow cracks, in any direction. As anticipated, our drift north-westward was most rapid during the winter and spring, while the northerly winds stopped or drifted us backward during the summer.

"On June 18, 1894, we were on 81 degrees 52 minutes north, but we drifted then southward only. On October 21, we passed 82 degrees north. On Christmas eve, 1894, latitude 83 degrees north was reached.

"A few days later 83 degrees 24 minutes, the furthest north latitude previously reached by man.

"On January 4 and 5 the *Fram* was exposed to the most violent ice pressures we experienced. She was then firmly frozen in ice of more than thirty feet of measured thickness. This floe was over-ridden by great ice masses, which were pressed against the port side with irresistible force and threatened to bury, if not to crush her.

"The necessary provisions, with the canvas kayaks and other equipments, had been placed in safety upon the ice. Every man was ready to leave the ship, if necessary, and was prepared to continue with the drift, living on the floe. But the *Fram* proved even stronger than our trust in her.

"When the pressure rose to the highest and the ice was piled up high above the bulwarks, she was broken loose and slowly lifted out of her bed in which she had been frozen, but not the slightest sign of a split was to be discovered anywhere in her.

"After that experience, I consider the *Fram* almost equal to anything in the way of ice pressure. Afterwards we experienced nothing more of the kind, but our drift was rapidly continued north and northwestward.

"As I now with certainty anticipated that the *Fram* would soon reach her highest latitude north of Franz Josef Land and that she would not easily fail to carry out the programme of the expedition, viz.: To cross the unknown Polar basin, I decided to leave the ship in order to explore the sea north of her route.

"Lieutenant Hansen volunteered to join me and I could not easily have found a better companion in every respect. The leadership of the expedition on board the *Fram* I left to Captain Sverdrup.

"With my trust in his qualifications as a leader, and his ability to overcome difficulties, I have no fear but that he will bring all the men safely back, even if the worst should happen and the *Fram* be lost, which I consider improbable. On March 3 we reached 84 degrees 4 minutes north. Hansen and I left the *Fram* on March 14, 1895, at 83 degrees 59 minutes north and 102 degrees 27 minutes east."

The *Fram* proved that Nansen's confidence in her was well-grounded.

The map shows approximately Nansen's ship and sledge tracks in the Arctic Ocean, and tells the story of the voyage.

In the southwest corner, at the point marked 1, the *Fram* passed through Yugor Strait, and on August 4, 1893, was in that part of the Arctic Ocean known as the Kara Sea.

It is always possible for vessels to pass through Yugor Strait in summer, but the Kara Sea is sometimes

blocked with ice, and it was here that the Dutch circum-polar expedition lost their ship by crushing in the ice in 1881 and never reached their proposed station in Siberia. The fact that the last news heard from Nansen after his departure was that he was still in the Kara Sea led some persons to wonder if he ever got out of those dangerous waters at all.

But he did get out, and made as rapid progress to the east as Nordenskjöld did on the *Vega* in 1878. Both reached Cape Chelyuskin, the most northern point of Asia, in the month of August. Then Nansen turned southward to the point marked 2.

He was making for the mouth of the Olenek river where, by his directions, a lot of dogs had been collected for him. A storm prevented him from reaching the coast and taking the dogs aboard. Why he did not call at the mouth of the Olenek was a mystery that gave much anxiety to his friends.

It was thought by many improbable that he had reached the New Siberian Islands, where he expected to find his north flowing current, and therefore that his plans had been thwarted at the very outset, and that he had probably pushed into the ice west of Cape Chelyuskin.

He, however, carried out his preliminary plans to the letter except that he did not get all the dogs he wanted. From near the mouth of the Olenek river he proceeded towards the New Siberian Islands, and just a little west of the point marked 3 he entered the ice and his ship was soon frozen in. His drift to the northwest then began.

At the point of his journey marked 4 he discovered that the depth of the sea had suddenly increased from

90 fathoms to 1600 fathoms, and he found other depths of 1900 fathoms, a remarkable discovery in view of the long prevailing belief that the Arctic Ocean was a very shallow sea.

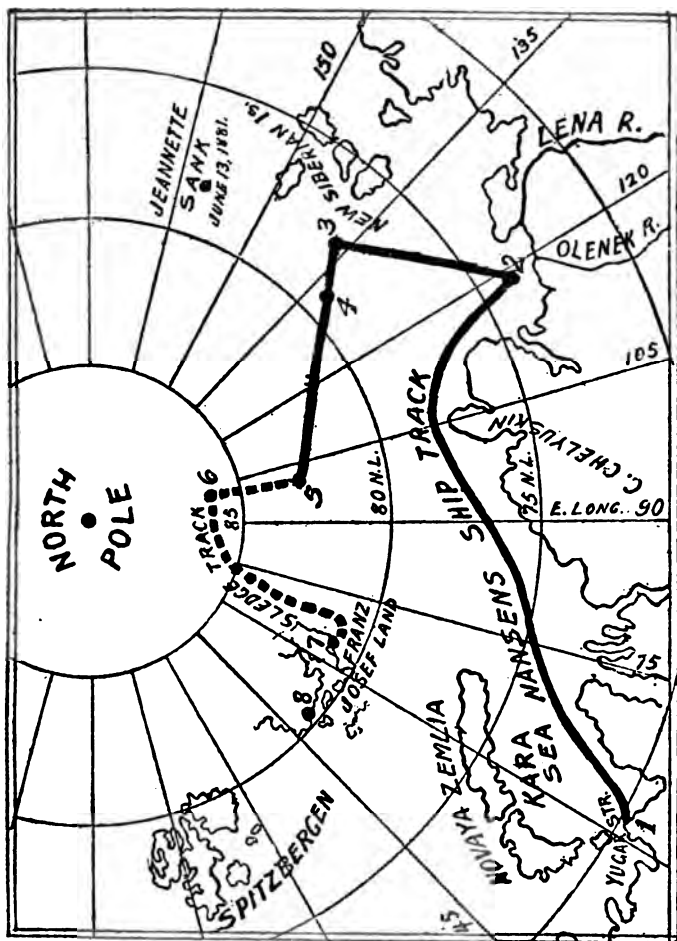
Point 5 shows the place where Nansen and his comrade left the *Fram*. Thus far the *Fram* had drifted in the ice, from very near the place indicated by point 3, to point 5. But this drift was by no means in a straight line as it is represented on the map.

Sometimes the *Fram* drifted south, if the wind persisted from the north. All that can be shown here is the mean direction of the drift. We get a vivid idea of the slow progress made when we consider that it took the *Fram* one year five months and twenty-two days to advance from points 3 to 5, a distance in a straight line of about 470 miles. The prevailing winds were taking the *Fram*, not the Pole, but in the direction of northern Franz Josef Land and Spitzbergen.

The broken line is meant to show Nansen's sledge journey over the hummocky sea ice, first directly north toward the Pole and the more circuitously to the southwest, where he reached land and safety.

It took him twenty-five days to travel from the *Fram* to his highest north, and the distance was about 145 miles. Two men in woolen clothing, with two dog teams, have therefore approached within about 250 statute miles of the North Pole.

It is impossible to show even with approximate correctness Nansen's sledge route from point 6 to Franz Josef Land, partly because he was not able to take any longitudes for much of the way, and partly because Payer's map of that country, the only one we yet possess, has been found both by Jackson and Nansen to be



inaccurate both in its delineation of the archipelago and also in the geographical position assigned to the islands.

But on this sketch map Nansen's highest north is joined to the point marked 7, which is about where he landed in Franz Josef Land, and near where he spent the winter.

From point 6 the broken line merely indicates the general direction of Nansen's route from his highest north to land.

Last spring he started southward, intending from the southern coast of Franz Josef Land to set out for Spitzbergen, which he felt sure would be visited by one or more vessels during the season.

On the way he happily met Jackson, who had wintered at the point marked 8, and the intrepid explorer returned to Europe on the vessel that had just renewed Jackson's supplies.

The *Fram*, when Nansen left her, seemed to be making slow but certain progress toward Spitzbergen. She arrived safely at Skjervoe, a fishing port on the bay near the North Cape on August 20, 1896.

From July 10 last the vessel worked her way through the ice in the southerly direction and reached open water on August 13. When in the highest latitude reached some birds, guillemots and fulmars, and narwhals were seen, but no other organic life was visible.

The deepest sounding taken by the *Fram* was 2185 fathoms (13,110 feet). The lowest temperature recorded during the voyage was 52° below zero.

She drifted to the north after Nansen left her nearly two degrees, and her highest north was less than twenty miles south of the most northern point he attained.

Nansen's voyage has demolished the theory that took him north. He admits now, what Greely, Nares, and others told him before he started, that the ice drift is largely dominated by the wind. De Long found that the ice mass was driven about by the prevailing winds, with a predominating tendency to the northwest because the prevailing winds are from the southeast. This accords exactly with Nansen's experience. After he pushed the *Fram* into the ice, directly west of the New Siberian Islands, one year five months and twenty-two days elapsed before he left his vessel. In that time her net advance from the point where the ice drift began was 470 miles to the northwest, the distance to the north gained being about 340 miles. She had traveled much further than this, for northern winds, persisting for weeks at a time, had driven the ice southward. In the long letter received from Nansen he says nothing of his theory of the north flowing current which he so laboriously fortified with arguments; but he does say repeatedly that he found the ice moving with the prevailing winds.

Not the least of the important results he attained is the fact that his theory did not stand the test of examination; and in its scientific and geographic aspects there can be no doubt that Nansen's journey will rank among the most successful of Arctic enterprises. He has done for the western part of the Asian Arctic Ocean what De Long did for the eastern part with an augmentation of the scientific features of the work that belongs to this later era of Polar research.

Nansen has made one discovery that will greatly surprise oceanographers. Nowhere within the Polar area had soundings yet been made indicating that the Arctic

Ocean is anything but a comparatively shallow sea. The deepest soundings in the Spitzbergen or Barents Sea are only from 100 to 200 fathoms. Some depths of over a mile have been found in the East Greenland Sea, though most of the soundings there point to a high submarine plateau, with some abrupt depressions. The comparatively few soundings north of our continent show shallow water at a considerable distance from land. But Nansen appears to have discovered persistent depths of 1600 to 1900 fathoms north of 79° north latitude, which will tend to upset some theories of oceanic physics based upon the notion of a shallow Arctic Sea. He and some of his comrades are sound scientific observers, and the results of their studies in the various lines of research which, Nansen says, he was able to carry on with success, will be received with much interest.

The fact that the party were well and strong after many months of the tedium and hardships of life on the ice-pack speaks well for Nansen's régime, and he doubtless attributes this result in part to the success of the electric light plant with which he illumined the Arctic night. He carried a windmill to run his dynamo, and if the wind failed him, he proposed to use hand power. He regarded heat and light as among the best preventives of disease, and he reports that his electric light fulfilled all his expectations.

CHAPTER XIV.

TO THE POLE BY BALLOON.

AFTER nearly two years spent in preparation, M. Andree, the famous Swedish explorer, is about ready to start on his balloon journey to the North Pole, and if all goes well he, with two companions, will probably commence their long flight some time this year. Of all the expeditions that have ever started to find the Pole, Andree's seems the most practicable, and the enterprise is vouched for by the gentlemen who back it, and who claim that they have solved the Polar problem. Chief among these is King Oscar of Sweden, who has contributed \$30,000 toward the expenses of the expedition. He heads a list of over one hundred patrons, and many of the names are well known.

The journey will be made under the auspices of the Royal Swedish Academy of Science, and will start from the northern coast of Sweden, as the facilities for the ascent are best there.

Andree is well known in scientific circles as an experienced civil engineer and distinguished aeronaut. For many years he has made ascensions, and on several occasions taken long flights, always with safety. In November, 1895, in his balloon *Svea*, he traveled from Gothenburg on the west coast of Sweden to the island of Gotland in the Baltic, over 250 miles, in less than five hours. Although he has a great European reputation as a scientific aerial traveler, he is not at all an enthusiast, but a practical, cool-headed man of science, who has made many experimental tests, besides his famous journeys.

He is also a practical boatman, and it is owing largely to his skill in this direction that he has been enabled to add many new devices to his balloon and the methods of its management. His scheme is said by scientists to be much superior to the Peary method, inasmuch as it is decidedly quicker and Andree will be out of the reach of the dangers and obstacles that overland expeditions encounter.

The object of the trip is to locate the Pole, ascertain the temperature and conditions surrounding it, and photograph the new country. To accomplish this Andree will take with him an intricate photographing outfit of twenty cameras and instruments, which will be operated all the time or in constant succession during the entire trip, an average of one picture a minute being taken.



M. ANDREE.

The photographs will be taken in double sets. One set will be developed aboard the balloon, so that in case of accident the negative can be rolled into a small package and saved, while the other set will be kept in plates and developed at the end of the journey. These pictures are for the new school geographies and must be as complete as possible.

The balloon itself is a wonderful affair, and embraces all the contrivances that modern aerial science has

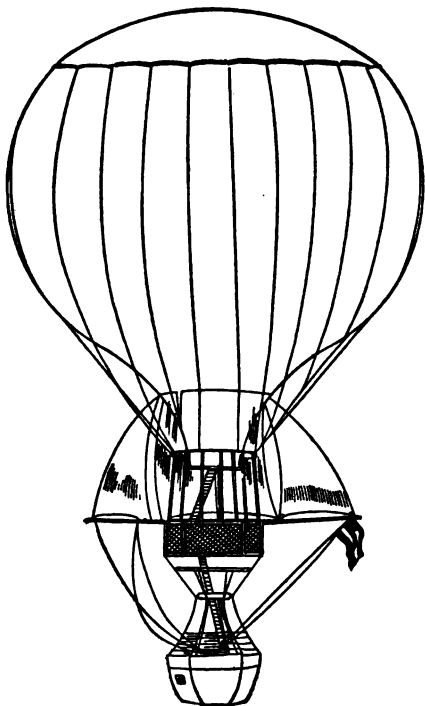
devised. It is of enormous size, being 72.6 feet in diameter, and was built by L. Gabriel Yon of Paris, the greatest expert balloon constructor in the world. Before commencing the work, he carefully studied Andree's scheme and pronounced it entirely practicable. He advised the use of a balloon of this size and construction, and claims that it will float for 30 days without refilling. He was endorsed in his calculation by the well-known aeronauts, Graham, Gaffard and also Poissilles, who computed that it will lose comparatively a small amount of gas during that time.

It is made of the finest silk balloon material that can be manufactured, and is strongly woven together. There is almost absolutely no waste of air, and the hydrogen with which it is inflated has been made in the Arctic regions, so that the balloon will be in its own element during the trip. It requires 1700 cylinders of the gas to fill the balloon, so huge are its proportions.

The great feature of the airship is that it has a rudder, or sail, to guide it through space. Heretofore balloon steerers have been useless, and so impracticable as to bring disaster to the occupants, but Andree has invented this feature himself, and on his working model it operates perfectly. It comprises a large sail, shaped after the fashion of a boat sail. It inflates readily and is controlled by a guide rope, which can be fastened to a number of straps and hooks on the top of the car. When he raises the sail and fastens the guide rope to the northern strap, the balloon immediately turns toward the North. When he unfurls the sail and hooks the guide rope to the middle strap it goes straight ahead without deviation, and when he heads it to the Southern strap it goes South. In

other words, the ropes guide the sail and the sail guides the balloon.

Beside this, Andree has a number of drag ropes that may touch the earth or sea, and besides aiding in the guiding of the craft, the object of these is also to keep it at the same distance from the earth in passing over land and water. They will also keep the speed down to about 20 miles an hour, which Andree says is as fast as any balloon can sail with safety. At the end of these ropes are baskets constructed of coconut fibre, which are tremendously hard to tug along, and will keep the balloon down to its right speed, and also at a regular altitude of 850 feet, which is as high as they dare go to get good photographs.



ANDREE'S BALLOON.

There are other new devices, from the escape valve

to the car of the balloon, which can be instantaneously operated in case of emergency, and also a number of instruments indicating their speed and recording the distance.

The car, the important feature in this expedition, is a two-storied structure with balconies around each story. It is splendidly built and divided into four rooms, two downstairs and two up. The lower ones are fitted up as a kitchen and bedroom, while upstairs is a combination store room and dark room for photographs, and a general camera, work and observation room.

In the kitchen are three alcohol stoves, closely guarded from draught, and capable of furnishing all the heat required for both warmth and cooking purposes. One side of the room is equipped with shelves and lockers, and in these are to be stored away layer after layer of meat pies and canned goods all ready for heating. The meat pies are made of the most nourishing part of the meat, carefully extracted for the expedition, and there are stores enough to last for four months, so that in the event of disaster and their having to effect a landing in the North, they will be well provisioned. The stoves have a patent attachment on which the food can be left to warm without danger of burning, for time cannot be spared to watch it. The larder is well supplied with stimulants, and, in fact, all things necessary for wintering in the North, although no such apprehension is felt. In stocking the larder, provision was also made for relief to any suffering explorers whom the balloonists might chance to come across.

There are to be three in the party. One will patrol the deck constantly, direct the balloon and look after

the meals. Another will keep the photographic instruments going, while the third will rest. They will relieve each other every four hours, as physical strength gives out very quickly in the Pole latitudes and the body rebels and demands nourishment constantly.

A spiral stairway leads to the floor above into the dark room, where are to be stored the hundreds of photographic plates as soon as they are taken. The room has also all the appliances of a developing room and along the walls are racks holding the bottles of acids and chemicals.

A small door leads into the camera room, and in here are the scientific instruments, cameras, etc. An immense camera is fitted on the front wall, with its lens pointing through a port hole, so arranged that the instrument may be quickly focussed in any direction. Numerous other holes are arranged around the wall for quick views, and on each of the three sides is a telescope fitted ready for use.

As fast as the photographs are taken they will be placed in a chute running along the wall and slid into the dark room, where the frames will be opened.

One peculiar thing about the car is that it contains no lamps or other means of illumination, and Andree explains this by saying: "We do not need any, for up there we shall be in perpetual daylight. It is the land of the midnight sun, you know, and there will not be a second's darkness during the entire trip.

"Another big advantage in our trip is that we shall be where the air is almost perfectly even, no colder one time than another, and where there is no rain.

"In ballooning in the Arctic regions we will also have the advantage of the absence of vegetation, and thus

the drag lines will pass along evenly and without obstruction. Still another advantage, and an exceedingly important one, is the absence of electrical storms. No record has ever been made of lightning or thunder in that part of the globe. It has been suggested that a heavy snowfall would destroy the balloon, but we have no apprehension on this point, as we can easily draw in our drag lines and sail above it.

"Dr. Nils Exholm, one of the foremost meteorologists in Europe, and one of the members of the Swedish North Pole Expedition in 1882, says the only danger he fears in our undertaking is that, on reaching the Pole, we may experience a perfect calm; but it is the consensus of scientific opinion that the center of the Polar regions is usually surrounded by outward-blowing wind currents.

"As to how long it will take us to reach the Pole, we figure that we should be immediately over it after two days' and two nights' steady sailing. Our course will be in a direct line from Spitzbergen over the Pole to Behring Sound, a total distance of 2295 miles, and will not, we calculate, take us more than six days, which is but one-fifth of the time the balloon can float without refilling. The distance from Spitzbergen to the Pole is estimated at 700 miles, and, with a good south wind, we should reach it on time. Our compass will tell us when we are there.

"After hovering around the Pole and taking all the photographs possible, we will immediately direct our course westward to America, as up there we shall be much nearer America than Sweden.

"We will effect a landing on American shores, but just where, it is, of course, impossible to tell. It all

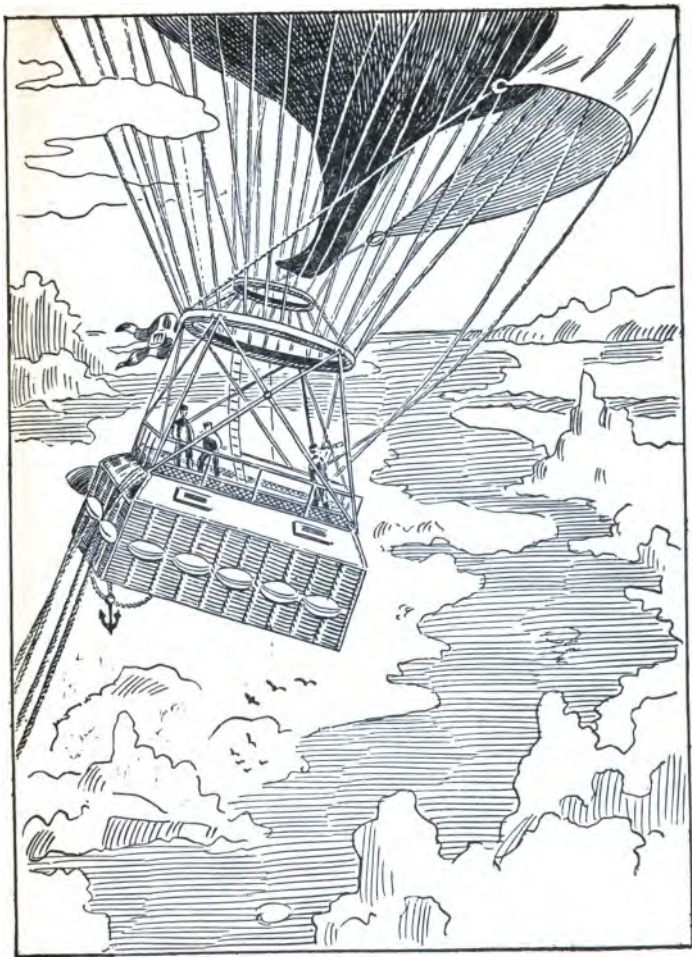
depends upon the wind currents. I do not apprehend any trouble whatever, for trouble in our case would mean death.

"If all goes well, we shall be able to see more of the North Pole and the Arctic regions in a few hours than a land expedition would in months, and, besides this, we can bring back photographs of the new country, which alone will more than defray the expenses of the trip, to say nothing of enlightening the scientific world on many points that have always been in doubt."

The immense balloon was exhibited at the Champs de Mars, in Paris, on May 16, 1896. It measures 220 feet in circumference at its equator, and 80 feet in height, but from its top to the bottom of the suspended car it will measure more than 120 feet. It will be provisioned to last the three explorers three years. One thousand gallons of water are included in the provisions. The start will take place some time between the 10th and 20th of July.

An oiled silk covering, called the "chemise," will be used during the trip to protect the top of the balloon from rain and accumulations of snow and ice. Ropes attached to the skirt of the "chemise" will permit of its being shaken violently whenever necessary.

Nine out of every ten persons in all Scandinavia share Andree's faith that he will come safely home after a long and successful air voyage over the Arctic area. His air ship is freighted with the high hopes of his countrymen. Every dollar of the very large sum he needed was raised more than a year before he sailed for Spitzbergen. Dr. Nansen, one of Andree's best friends, said that he thought it very probable the North Pole some day would be reached by balloon.



ANDREE'S BALLOON: THE WORKING CABINET.

All the world wishes Andree well, but nobody knows, unless Andree, himself, has already learned, what the outcome will be. We have scarcely more knowledge of the wind currents of those vast regions than Nansen had of the sea current he hoped would waft his ship northward. A single moment of misfortune may blast the undertaking. There are critical factors in the problem that Andree can test only in the air above the frozen zone. May he not cross the Pole and never catch a glimpse of land or ice-covered sea in those regions of fog and mist? When Peary was traveling on the ice cap 8000 feet above the sea, a stick stuck in the snow was often thickly covered with frost crystals in a few minutes. If they also coat Andree's immense spread of cloth how will it affect the buoyancy of his balloon? These are examples of scores of questions that actual experience alone can answer.

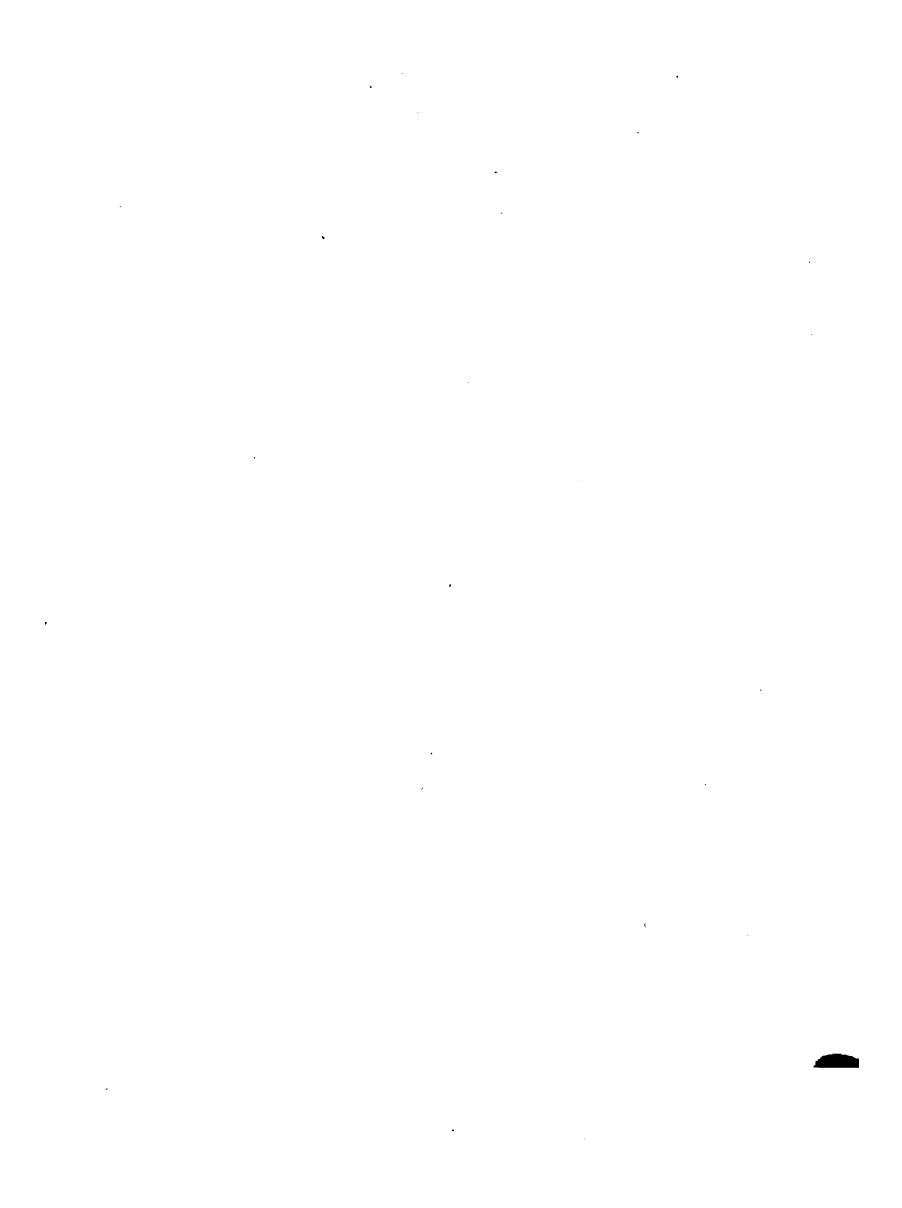
Whether the object of the hardy explorers and the promoters of the expedition be attained or not, they surely deserve the unstinted encouragement and sympathy of all the world and due credit for the thorough manner in which the preliminary details have thus far been carried out.

It can only be hoped that the daring explorer will achieve the great success that is fully merited by his courage, long study, enthusiasm and faith.

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